

COUNTWAY LIBRARY



HC 4XUZ 2

24.A.306.

GYNÆCOLOGICAL NURSING

GYNÆCOLOGICAL NURSING

BY

ARTHUR E. GILES

M.D., B.Sc., F.R.C.S., M.R.C.P.

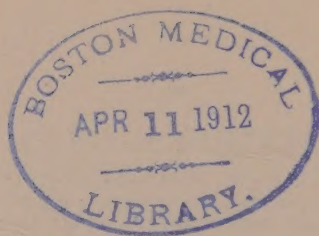
SURGEON TO THE CHELSEA HOSPITAL FOR WOMEN

GYNÆCOLOGIST TO THE PRINCE OF WALES'S GENERAL HOSPITAL, TOTTENHAM

WITH 41 ILLUSTRATIONS

NEW YORK
WILLIAM WOOD & COMPANY

MDCCCCXII



10493 Wed.

PREFACE

FOR a number of years I have had the pleasure of giving a short course of lectures on Gynæcological Nursing to the nurses at the Prince of Wales's General Hospital, Tottenham; and last year the wish was expressed that I should publish my lectures in book form. On inquiry, I found that there were several books on the same subject available for nurses; but the mode of treatment appeared to be sufficiently different from the scope of my lectures to justify my acceding to the request that had been made to me, and this little book is the result.

My aim has been to give to nurses who are engaged in this branch of work sufficient information about the organs concerned, and their diseases, to make their work intelligible and interesting, without giving such details as would be suitable only in a book on gynæcology; in other words, I have written for the nurse, and not for the medical student. On the other hand, I have endeavoured to make the chapters on nursing as complete as possible.

The illustrations have been drawn expressly for this work, with the exception of three sterilizers, for

which I am indebted to the courtesy of Messrs. Allen and Hanburys and the Medical Supply Association.

I wish to express my gratitude to Miss Annie Howard, the Sister in charge of my wards at the Chelsea Hospital for Women, and to Miss Ada Simmonds, who was until lately the Sister of the Louise (Gynæcological) Ward at the Prince of Wales's Hospital, for their valuable summaries of the after-treatment of cases of abdominal operation.

I also wish to record my indebtedness to Miss E. Margaret Fox, Matron of the Prince of Wales's General Hospital, for her kindness in revising the manuscript and for valuable suggestions.

ARTHUR E. GILES.

UPPER WIMPOLE STREET,
November, 1911.

CONTENTS

CHAPTER	PAGE
I. ANATOMY AND PHYSIOLOGY OF THE PELVIC ORGANS -	1
II. DISEASES OF THE PELVIC ORGANS - - -	21
III. DISEASES OF THE PELVIC ORGANS— <i>continued</i> -	40
IV. PREPARATION FOR EXAMINATION - - -	58
V. MINOR TREATMENT - - - -	72
VI. ANTISEPSIS AND ASEPSIS - - - -	89
VII. PREPARATION FOR OPERATION - - - -	99
VIII. PREPARATION FOR OPERATION— <i>continued</i> -	129
IX. THE OPERATION - - - -	138
X. AFTER-TREATMENT OF ABDOMINAL OPERATIONS -	146
XI. AFTER-TREATMENT OF VAGINAL OPERATIONS -	163
XII. COMPLICATIONS AFTER OPERATIONS - -	170
INDEX - - - - -	183

LIST OF ILLUSTRATIONS

FIG.	PAGE
1. THE PELVIC ORGANS IN SAGITTAL SECTION - -	3
2. THE PELVIC ORGANS VIEWED FROM IN FRONT - -	5
3. THE PELVIC ORGANS VIEWED FROM ABOVE - -	8
4. THE UTERUS AND TUBES IN CORONAL SECTION - -	10
5. DIAGRAM SHOWING THE CHANNELS OF INFECTION OF THE PELVIC ORGANS - - - - -	27
6. DIAGRAM ILLUSTRATING THE DEVELOPMENTS AND DANGERS OF EXTRA-UTERINE PREGNANCY - -	38
7. DIAGRAM SHOWING THE POSITIONS IN WHICH CYSTS MAY OCCUR IN THE PELVIC ORGANS - - - - -	41
8. SIMS'S POSITION - - - - -	60
9. THE GENUPECTORAL POSITION - - - - -	61
10. THE GYNÆCOLOGICAL POSITION - - - - -	63
11. THE UTERINE SOUND - - - - -	68
12. FERGUSSON'S SPECULUM - - - - -	68
13. SIMS'S SPECULUM - - - - -	69
14. NEUGEBAUER'S SPECULUM - - - - -	69
15. UTERINE DRESSING FORCEPS - - - - -	70
16. SWAB-HOLDER - - - - -	70
17. BLADDER SOUND - - - - -	70
18. DOUCHE-CAN - - - - -	73
19. ROTUNDA DOUCHE - - - - -	74
20. PLAYFAIR'S PROBES - - - - -	83

FIG.		PAGE
21.	SCARIFIER - - - - -	83
22.	HODGE PESSARY - - - - -	85
23.	RUBBER RING PESSARY - - - - -	86
24.	INSTRUMENT STERILIZER - - - - -	95
25.	EXTEMPORIZED TRENDELENBURG POSITION - - - - -	101
26.	TRENDELENBURG POSITION - - - - -	102
27.	LITHOTOMY POSITION - - - - -	103
28.	PLAN OF OPERATING-ROOM IN PRIVATE HOUSE - - - - -	104
29.	KELLY'S PAD - - - - -	107
30.	HIGH-PRESSURE STEAM STERILIZER FOR DRESSINGS, ETC. - - - - -	110
31.	MACDONALD'S STERILIZER FOR DRESSINGS - - - - -	111
32.	MANY-TAILED BANDAGE WITH THIGH-PIECES - - - - -	113
33.	OVUM FORCEPS - - - - -	119
34.	VOLSELLA - - - - -	119
35.	SELF-RETAINING RETRACTOR - - - - -	119
36.	CLOVER'S CRUTCH - - - - -	123
37.	AUVARD'S SPECULUM - - - - -	123
38.	FENTON'S DILATOR - - - - -	127
39.	FLUSHING CURETTE - - - - -	127
40.	BROAD LIGAMENT CLAMP - - - - -	127
41.	SELF-RETAINING CATHETER - - - - -	165

INTRODUCTION

THERE can be no doubt that in the sphere of nursing the personality of the nurse is of hardly less importance than the quality of her work. It will therefore, perhaps, not be deemed out of place if I introduce my remarks on nursing with a few words about the nurse. More inspired pens than mine have sketched the Ideal Nurse; but I trust that my perfect Gynæcological Nurse will at least come up to the standard: for in this department more than in any other is there need to aim at the ideal. Let me endeavour to depict her as I picture her.

Trimness and tidiness in person and appearance predispose the patient in her favour. She is calm, serene, and cheerful; she has her worries, anxieties, and sorrows, like other people, but leaves them outside the sick-room, because her rôle is not to receive sympathy, but to give it. Her smile is an encouragement, and when she enters the room the patients feel better, and are sure that they will do well. She has the gift of sympathy, not of the wet-eyed, but of the tender and helpful sort; she knows the shrinking and

dread of the nervous girl who has to undergo an examination, and of the nervous woman who has to face the ordeal of an operation, with its unknown but vividly imagined terrors and its uncertainties of life and death. To her, this is not merely a "case" to be scolded, treated abruptly, or dealt with in a manner of formal routine, but a woman to be cheered and encouraged, to be fortified and enabled to go through her ordeal with courage and hopefulness. She is quiet in her ways and movements, active without being fussy, reposeful without being lethargic. She talks but little; she is very reserved on the subject of the patient's illness or operation, and refers the patient and her friends to the doctor for all inquiries. She speaks seldom of her previous cases, and never of the bad ones, unless to draw lessons of encouragement; she is singularly reticent about her own affairs.

She is not small-minded, and she is incapable of a petty spite; she looks out on the world with a large-hearted tolerance for the opinions, and charity for the actions, of others—though in her own thoughts and life the sharp boundary-lines of right and wrong are never blurred.

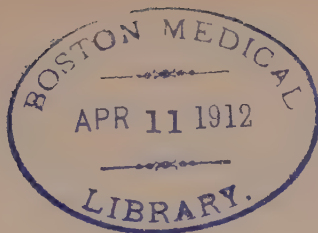
In her work she is tidy and methodical; she is quick but thorough, not slapdash or slovenly. Her ministrations to the patients are marked by gentleness and delicacy, without prudery; she avoids hurting susceptibilities, but does not fail in efficiency. She is scrupulously exact in the carrying out of

instructions, but she cares even more for their spirit than for their letter ; and because she has a sound judgment she can be given some scope to exercise her discretion. She is watchful and observant ; she can tell the surgeon all that he wants to know about the progress of the case, and is quick to detect any signs that are unfavourable.

She has intelligence as well as judgment, and, in order to increase her practical efficiency as well as her interest in her work, she has acquired some knowledge of the medical aspects of her subject, by reading about the diseases from which her patients are suffering. She is eager to learn and quick to understand, and she has a retentive memory.

She values and cares for her health, knowing that this is essential for her work ; but when the occasion demands she can sacrifice personal comfort and convenience to devote herself whole-heartedly to the needs of her patients. No effort is too great for her ; no detail is too small for her.

Does this sketch appear to be too idealized ? It is, nevertheless, drawn from life.



GYNÆCOLOGICAL NURSING

CHAPTER I

ANATOMY AND PHYSIOLOGY OF THE PELVIC ORGANS

THE female pelvic organs are a series of structures adapted to the function of child-bearing. Every living being, whether plant or animal, is derived from a minute cell called an "ovum"; but before an ovum can develop into a human being it must meet and unite with another minute cell derived from the male parent, and called a "spermatozoon." After the union the resulting cell is described as a "fertilized ovum," or "oöperm." In all the higher animals the oöperm can only grow in a specially prepared organ, known as the "uterus," or "womb." The oöperm becomes attached to the lining membrane of the uterus, known as the "endometrium," and in due time the place of attachment undergoes changes which convert it into a channel of communication between the parent and the embryo. After such changes the place of attachment is called the "placenta."

The organs necessary for the above purposes are—first, a place where the ova can be produced and ripened ; such a place is the ovary. One ovary would be sufficient, and birds only possess one ; but for human beings, as for all mammals, two are provided, and the value of the provision is evident in many cases where one ovary is diseased. The second organ necessary is the uterus. Thirdly, there must be a channel of communication between the ovary and the uterus, and this takes the form of a tube (named, after the anatomist Fallopius, the “ Fallopian tube ”), which passes out from each side of the uterus to the corresponding ovary. Fourthly, there must be a passage between the uterus and the outside of the body, to allow of the entrance of the spermatozoa, and later, the exit of the child. This passage is the vagina.

The vagina passes down between two other passages—namely, the water-passage, or urethra, in front, and the lower portion of the bowel behind. Surrounding the opening of the vagina is an area described collectively as the “vulva”; and surrounding the internal organs are various structures designed to hold them in place and to support the bloodvessels, lymphatics, and nerves, with which they are supplied.

After this general survey we can consider the parts concerned in rather more detail.

The Vulva.

The vulva is fringed with hair in the adult, and is bounded in front by a prominence over the pubic bone

called the *mons veneris* (Fig. 1, *m.v.*); behind by the perineum (*pe.*); and at the sides by the folds of the thighs.

At the outer borders of the vulva are situated the *labia majora*, or greater lips (Figs. 1 and 2, *L.*). Each

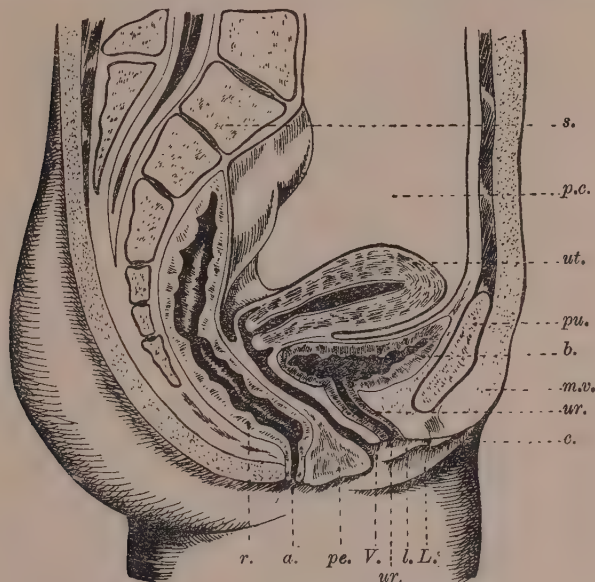


FIG. 1.—THE PELVIC ORGANS IN SAGITTAL SECTION.

a., Anus; *b.*, bladder; *c.*, clitoris; *L.*, labium majus; *l.*, labium minus; *m.v.*, mons veneris; *pe.*, perineum; *p.c.*, peritoneal cavity; *pu.*, pubic bone; *r.*, rectum; *s.*, sacrum; *ur.*, urethra; *ut.*, uterus; *V.*, vagina.

The line curving up behind the uterus is the utero-sacral ligament.

labium majus consists of a fleshy fold of skin passing backwards from the mons veneris, and terminating opposite the perineum. It is covered with hair on its

outer side, whilst its inner side is smooth. Just within the labia majora are the *labia minora*, or lesser lips (Figs. 1 and 2, *l.*). They are smooth, hairless, and sometimes dark, owing to the presence of pigment. Behind the vaginal opening the lesser lips are practically joined together, whilst in front they become narrower, and each one divides into two branches, which meet those of the opposite side. Between the two branches there is a small prominence called the *clitoris* (Fig. 1, *c.*), partly covered by a hood-like structure, known as the *prepuce clitoridis*. The lower edge of the hood is formed by the anterior branches of the labia minora. In children, and sometimes in adults, the labia minora are quite covered-in by the labia majora, but in some women the lesser lips are large, and remain uncovered.

Between the clitoris and the opening of the vagina (Fig. 1, *V.*) is a smooth surface, in the centre of which is seen the opening of the *urethra* (Fig. 1, *ur.*). Immediately behind the vaginal orifice is a small fold of skin, which receives the name of the *fourchette*.

The boundary between the vagina and the vulva is indicated by the position of the *hymen* (Fig. 2, *h.*). This is a thin, membranous structure which partly closes the vaginal orifice. In its complete form it is present only in virgins, and after marriage and child-bearing its remains form little projections, called *carunculae myrtiformes*.

In the groove between the hymen and the lesser lip on each side is a minute orifice, which sometimes

shows as a reddish spot. It is the opening of the Bartholinian duct (Fig. 2, *b.d.*), by means of which

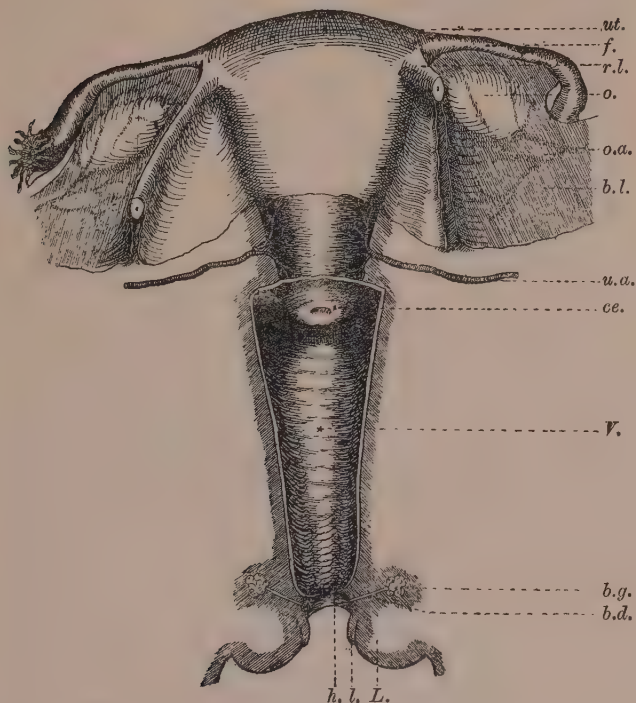


FIG. 2.—THE PELVIC ORGANS VIEWED FROM IN FRONT.

b.d., Bartholinian duct; *b.g.*, Bartholinian gland; *b.l.*, broad ligament; *ce.*, cervix; *f.*, Fallopian tube; *h.*, hymen; *L.*, labium majus; *l.*, labium minus; *o.*, ovary; *o.a.*, ovarian artery; *r.l.*, round ligament; *u.a.*, uterine artery; *ut.*, uterus; *V.*, vagina.

the secretion of the Bartholinian gland (Fig. 2, *b.g.*) is carried to the surface. If the orifice of the duct should get closed up, the secretion accumulates in the

duct, and distends it to a considerable size ; as a consequence the lower part of the labium majus swells, and the patient is said to be suffering from a Bartholinian cyst.

The Perineum.

The **Perineum** (Fig. 1, *pe.*) is the name given to the part of the skin between the vagina and the anus. In a section through the pelvis, as in Fig. 1, it is seen that the perineum forms the base of a triangle (more strictly speaking a pyramid) situated between the lower ends of the vagina and rectum. This triangular or pyramidal portion is spoken of as the "perineal body." The perineum and perineal body form a support for the vagina ; and when this support is withdrawn, as it is when the perineum is badly torn during labour, there is a tendency for the walls of the vagina and for the uterus itself to become prolapsed.

The Vagina.

The **Vagina** (Figs. 1 and 2, *V.*) is the passage leading up to the womb. In the natural state the anterior and posterior walls of the vagina are closely in contact, so as to leave no actual space, but if the vagina be distended with air a definite cavity appears. The vagina runs upwards and backwards in such a direction that, if it were continued, it would come out at the small of the back. Expressed geometrically, the line of the vagina makes an angle of about 60 degrees with a horizontal line drawn through the lower end of

the vagina. Owing to the way in which the neck of the womb is set into the vagina, the anterior wall is shorter than the posterior; the former is about 3 inches long, and the latter about 4 inches.

The slit formed by the vaginal opening is from before backwards; but within, owing to the way in which the anterior and posterior walls fall together, the slit is from side to side, and this slit is wider at the deeper or uterine end than it is near the vaginal orifice. The lining of the vagina is sometimes spoken of as a "mucous membrane," but a mucous membrane properly contains glands which secrete mucus, and none such are present in the vagina, the surface of which really more closely resembles skin. The lining is thrown into folds, as indicated in Fig. 2.

In the deeper part of the vagina the anterior wall is closely attached to the bladder, and the posterior wall to the rectum.

Owing to the way in which the cervix projects into the vagina, two recesses are formed, the one in front of the cervix being called the *anterior vaginal fornix*, and the one behind the *posterior vaginal fornix*.

The Bladder.

The **Bladder** (Figs. 1 and 3, *b.*) lies in the triangular interval formed by the pubic bone (Fig. 1, *pu.*) in front, the uterus above, and the vagina behind and below. When it is empty, its walls are collapsed, and it lies entirely in the pelvis; when it fills, it gradually pushes the uterus upwards and backwards, and when very full

it can be felt as a swelling just above the pubic bone. In cases of retention of urine the bladder becomes enormously distended, so that it may contain 4 or 5 pints of urine, and it then forms a considerable tumour in the abdomen.

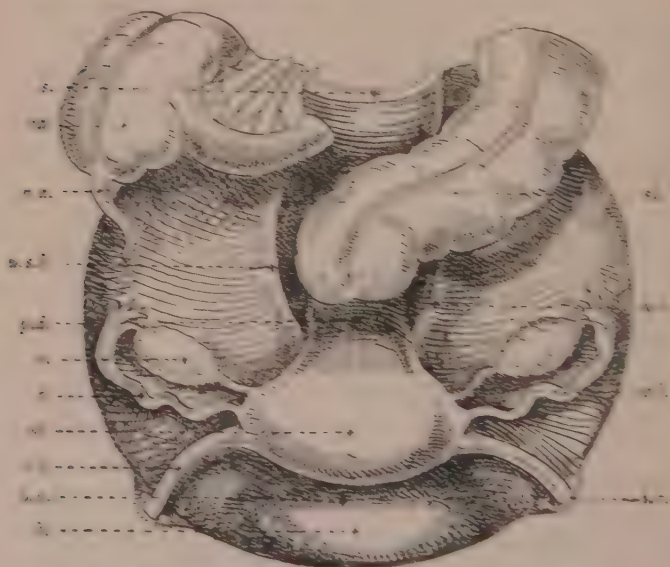


FIG. 3.—THE PELVIC ORGANS VIEWED FROM ABOVE.

Bl. bladder; ut., uterus; fal., fallopian tube; ov., inguinal ring; o., ovary; o. l., ovarian ligament; p. d., pouch of Douglas; r. l., round ligament; s., sacrum; sig., sigmoid; u. s. l., utero-sacral ligament; ut., uterus; u. v. p., utero-vesical pouch; v. a., verruiform appendix.

The Urethra (Fig. 1, *ur.*) is a short tube, about 2 inches long, running down from the lower part of the bladder to the outside.

It is closely attached to the lower part of the

anterior vaginal wall, and its direction is the same as that of the vagina; for instance, a catheter has to be passed upwards and backwards.

The Uterus.

The Uterus (Figs. 1, 2, and 3, *ut.*) is a somewhat triangular or pear-shaped organ about 3 inches long, and 2 inches at its widest part. It has three openings: the lowest is the *os uteri*, or mouth of the womb, and communicates with the vagina; the two upper ones are at the upper angles, and communicate with the Fallopian tube of each side. The portion between the three openings is the uterine cavity (Fig. 4, *u.c.*).

Three portions of the uterus are described by special names: the upper part, comprising all that part of the uterus that is above the openings into the tubes, is called the *fundus* (Fig. 4, *fu.*); the middle part is called the *corpus uteri*, or body of the womb (the portion between *i.t.* and *i.o.*, Fig. 4); and the lowest part is called the *cervix uteri*, or neck of the womb (Fig. 4, *ce.*). The cervix is the lowest inch of the uterus, and is as it were pinched off from the body, as shown in Figs. 1 and 4; the narrow part between the two is called the *internal os* (Fig. 4, *i.o.*); and, for the sake of distinction, the *os uteri* itself, where the uterus opens into the vagina, is called the *external os* (Fig. 4, *e.o.*).

The lower portion of the cervix projects into the vagina, as shown in Fig. 2. The cervix forms a kind of antechamber to the rest of the uterus; it takes no

direct part in the process of menstruation, and when the cavity of the uterus is distended by a developing child, the canal of the cervix remains closed. When labour sets in, and the baby comes forth out of his chamber, the inner door (the internal os) opens first,

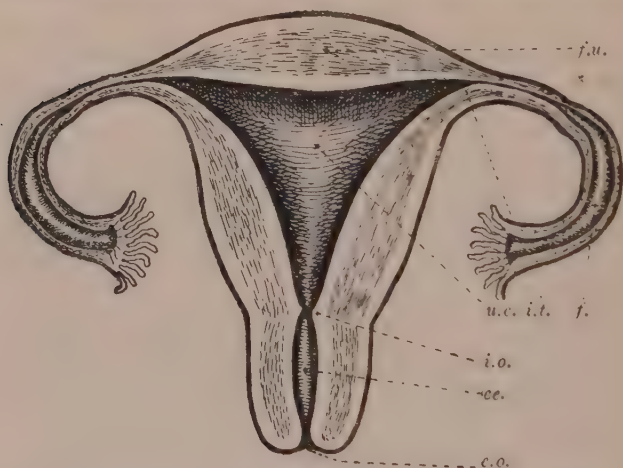


FIG. 4.—THE UTERUS AND TUBES IN CORONAL SECTION.

cc., Cervix; *e.o.*, external os; *f.*, Fallopian tube; *f.u.*, fundus uteri; *i.o.*, internal os; *i.t.*, inner end of the Fallopian tube; *u.c.*, uterine cavity.

The portion between *i.t.* and *i.o.* is the corpus uteri.

and then the outer door (the external os) opens to allow the child to pass down into the vagina.

The uterus is supported and steadied by three pairs of ligaments—the broad, the round, and the utero-sacral.

The Broad Ligament (Fig. 2, *b.l.*) is formed in this

way: The peritoneal membrane, which lines the front of the abdomen, passes down into the pelvis over the bladder, and then sweeps over the uterus to gain the back of the pelvis and cover the bowel. If the uterus be imagined holding out its two Fallopian tubes like two arms, it will be understood how the peritoneum is hung over the tubes like a towel over a towel-rail, or like the sleeves of a clergyman's surplice. In the space thus formed at the sides of the uterus, between the two layers of the peritoneum, run the bloodvessels, lymphatics, and nerves, which supply the uterus, and the double layer of the peritoneum, with its contained structures, is known as the "broad ligament." It will be understood that these ligaments sling up the uterus to the two sides of the pelvis in such a way that, while the side-to-side movement of the uterus is restricted, there is a certain freedom of play for the top of the uterus to swing backwards and forwards. This freedom is necessary in order to allow for varying degrees of fulness of the bladder.

The **Round Ligaments** (Figs. 2 and 3, *r.l.*) pass from the two top corners of the uterus, just in front of the beginning of the Fallopian tubes, and run to the inguinal ring on each side (Fig. 3, *i.r.*). The peritoneum covering them is thus lifted up in a fold, as seen especially in Fig. 2. Ordinarily these ligaments are quite slack, but if the uterus tends to turn over too far backwards, the round ligaments are put on the stretch and check the process. These ligaments have been made use of in the procedure known as "Alex-

ander's operation for the shortening of the round ligaments," in order to draw forward a uterus that has become displaced too far backwards.

The **Utero-Sacral Ligaments** (Figs. 1 and 3, *u.s.l.*) pass backwards from the lower part of the uterus, about the level of the internal os, to the back of the pelvis; they raise the peritoneum into two folds, just as is done by the round ligaments. Between them the rectum passes down at the back of the pelvis, and between the uterus in front, the rectum behind, and these two folds at the sides, a depression or pouch is formed, which is known as the *Pouch of Douglas*. This is seen in Fig. 3, *p.d.*

The Fallopian Tubes.

The **Fallopian Tubes** (Figs. 2, 3, and 4, *f.*) pass out from the upper part of the uterus towards the sides of the pelvis. The inner end of the tube is the narrowest part (Fig. 4, *i.t.*), and the lumen of the tube is so narrow here as only to admit a bristle.

Farther out the tube dilates, as seen in Fig. 4. The outer end of the tube opens into the peritoneal cavity, the opening being surrounded by a fringe of delicate finger-like processes which give to this part of the tube the name of the "fimbriated extremity." The opening of the tube is close to the ovary, so that when an ovum ripens and gets detached it can readily pass into the tube.

The Ovaries.

The **Ovaries** (Figs. 2 and 3, *o.*) are somewhat almond-shaped bodies which are attached to and project from the back of the broad ligament. The outer end of the ovary is connected with the fimbriated extremity of the corresponding Fallopian tube; whilst the inner end is slung up to the under-part of the cornu of the uterus, at the back, by the *ovarian ligament* (Fig. 3, *o.l.*). The ovary is made up of connective tissue and cells; a number of the latter are spread over the surface of the ovary, where they form what is called the *germ epithelium*. During the period of childhood up to the time of puberty, these cells present no remarkable features; but from puberty up to the change of life these cells undergo remarkable changes, which will be described presently in the process of ovulation.

The ovaries are the dominant organs of sex, and in some types of malformation they remain the only standard by which to judge whether the subject is a man or a woman. This point will be referred to further when speaking of malformations.

The pelvic organs have the usual supply of blood-vessels, lymphatics, and nerves. The vessels that are chiefly interesting from the operative point of view are the ovarian arteries (Fig. 2, *o.a.*) and the uterine arteries (Fig. 2, *u.a.*). These are the vessels that the surgeon is anxious to secure firmly in the operations of ovariectomy and hysterectomy.

Physiology.

We may now review briefly the mode of working of the organs we have been considering. A woman's life presents three well-marked phases. There is first the period of sexual immaturity, from infancy to puberty. During this period the question of sex is altogether in the background; and apart from the fact that the male and the female natures have somewhat different characteristics, due partly to inheritance and partly to training and education, the chief difference between a boy and a girl at this stage is that one has short hair and trousers, and the other long hair and frocks. At puberty the girl develops from the child into the woman, and the second period, that of sexual maturity, has begun. The outward sign of this period is the occurrence of menstruation, and the cessation of this function at the menopause (that is, in ordinary phraseology, the change of life), marks the beginning of the third period—that of sexual decline.

In the first and third stages, before puberty and after the menopause, the pelvic organs are not active. During the second stage they undergo the activities that we have now to consider. The period is called that of "sexual maturity," because at any time during this period the woman is capable of conceiving and bearing children. The activities of the organs are devoted to this end, and they centre round the ovaries and the uterus; the ovary is periodically producing

ova, or eggs, which are ripe for fertilization, and the uterus is periodically renewing its lining membrane so as to be fit to receive and harbour a developing ovum. In other words, during the period of sexual maturity the ovaries are periodically ovulating, and the uterus is periodically menstruating; and the only thing, apart from disease, that stops these processes is the occurrence of pregnancy and lactation (suckling).

Ovulation.—Briefly, the process of ovulation is as follows: One of the cells of the germ epithelium, which, as we have seen, covers the surface of the ovary, begins to enlarge; and as it does so it sinks more deeply into the substance of the ovary, and becomes surrounded by a number of smaller cells which form a protective covering for it. The ovum with its covering is called a *Graafian follicle*. In the course of further enlargement the Graafian follicle comes again to the surface of the ovary, forming a minute cyst in which the ovum is contained; the outer part of the follicle ruptures, and the ovum is set free. As a rule it is caught by the fimbriated extremity of the tube, passes down the tube, and so into the uterus. If by this time it has become fertilized, it becomes embedded in the endometrium and grows into a child; if it has not become fertilized, it passes away with the menstrual discharges. When the follicle bursts on the surface of the ovary, a little cavity is left; some blood is exuded into this, and by degrees the fluid part of the blood is absorbed and the follicle shrinks; but for some time it is visible on the

surface of the ovary as a little prominence, and owing to the yellow appearance which it presents when cut across it is called a *corpus luteum*.

To avoid confusion, it may be well to explain here that the term "ovum" is used a little loosely; it is applied to the germ cells of the ovary in their growing state, and it is also used in speaking of a developing embryo in the uterus. The whole embryo with its coverings, including the placenta, is often spoken of as the "ovum."

The process of ripening of an ovum, as above described, is called the *maturation* of the ovum; the whole process of ripening and discharge of an ovum is called *ovulation*. Ovulation occurs at intervals, though not at regular intervals, sometimes in one ovary, and sometimes in the other, throughout the whole period of sexual maturity. But when pregnancy occurs, ovulation ceases until after the confinement; and if the mother nurses the child at the breast ovulation is further suspended, as a rule during the whole time of lactation until the child is weaned, though sometimes it may begin again in spite of suckling, nine or ten months after the birth of the child.

Menstruation.—In olden times very strange ideas prevailed as to the meaning of the process of menstruation; and some of these ideas are still found among the unlearned. The most widely spread view was that by means of menstruation the system got rid of impure and harmful products; and this was the

reason why, according to the Mosaic law, a woman was regarded as unclean when she was menstruating, and very stringent regulations were laid down as to her conduct at this time. The same idea makes ignorant women to-day think that a stoppage of menstruation has a bad effect on the system; they will express a fear that it "will fly to the head," or elsewhere; "it" being some harmful substance which they suppose is ordinarily got rid of with the monthly discharge. The correct answer to the question, "Why does a woman menstruate?" is, "Because she is not pregnant."

In order that the uterus may be in a fit condition to receive and harbour an embryo, its lining membrane must be renewed; and Nature, anxious in the interests of the race that no opportunity of pregnancy should be missed through unpreparedness of the uterus, carries out this process of renewal about once a month. If at the close of the monthly period conception occurs, the ovum becomes engrafted on the freshly prepared surface, pregnancy proceeds, and there is no further menstruation, because there is no need of it. If conception does not occur, a fresh preparation is made, in the form of casting off more or less of the old lining, this process being accompanied by the bleeding which is characteristic of menstruation.

Nature is not so wasteful of energy as to make these preparations when there is no chance of pregnancy; consequently there is no menstruation before puberty, because up to this time the ovarian

changes have not started; and there is no menstruation after the "change of life," because then the ovarian changes have ceased; and at any time during the period of sexual maturity, if ovulation does not go on, there is no menstruation. Thus, if ovulation be suppressed—by the removal of the ovaries; or by constitutional illness, such as profound anæmia; or by certain poisons circulating in the body, such as morphia taken habitually; or by profound changes in the nervous system, such as certain forms of insanity or a sudden mental shock; or by natural influences, such as the existence of pregnancy or the process of lactation—if ovulation be suppressed owing to any of these causes, menstruation ceases.

Menstruation ought to be a painless process, and a certain proportion of women—namely, one in every three or four—find it so. Others suffer pain in various degrees. The process is associated with some congestion, not only in the pelvis, but to a lesser degree in the system generally; and this congestion is partly responsible for the feeling of being unwell, from which is derived one of the common terms for menstruation. There are many other popular ways of describing it. Rachel said when she was sitting on Laban's gods, and did not wish to be searched, that "the custom of women" was upon her. At the present day menstruation is spoken of as "the monthly period," or simply "the period" or "the monthlies"; working women say that they are "unwell," or "like it," or "poorly," or "having

them"; and there are many other synonyms in different districts.

The congestion of the pelvic organs incidental to menstruation is sometimes present for some days before or after the flow, and manifests itself in a discharge of mucus, either clear, like the white of an egg, or whitish, from the admixture of epithelium from the vagina. A discharge of either kind is generally spoken of as "the whites," and as long as it is not excessive need not be regarded as unhealthy.

The Menopause.—The final cessation of menstruation is spoken of as the "menopause," "climacteric," or "change of life." Tradition leads many women to fear it as a dangerous time of life, because it is supposed that the stoppage of menstruation brings all sorts of evils in its train. This is quite an exaggerated view of the matter. The stoppage of menstruation does not cause disease of any kind; and the only bad effect that can be attributed to the menopause is that most women suffer from a certain amount of disturbance in the form of flushings, and a few show nervous disturbances. After a few months these things settle down, and the woman is then often better than she has been for years. In some cases menstruation goes on regularly up to a certain time, and then stops abruptly; in other cases menstruation is irregular, and may cease for several months together, and then return on one or more occasions. Working women speak of this as the "dodging" period.

Occasionally, after a severe mental shock or a

serious illness, the menopause sets in much before the usual age ; the average age for the menopause is about forty-eight to fifty, but a premature menopause may come on before forty, or even before thirty.

It may be mentioned here that irregular or excessive hæmorrhage in a woman over forty-five is often erroneously attributed to the change of life, and consequently neglected as unimportant ; it cannot be too widely known that, whereas missed or scanty periods may be attributable to this cause, hæmorrhage is always a sign of disease, and urgently calls for immediate investigation and treatment.

CHAPTER II

DISEASES OF THE PELVIC ORGANS

In this chapter and the next the principal diseases to which the pelvic organs are liable, and the functional disorders with which they are associated will be briefly outlined; and it will be convenient to consider them in the following groups:

1. Malformations.
2. Inflammations.
3. Displacements.
4. Abnormal pregnancy.
5. Tumours.
6. Injuries.
7. Functional disorders.

1. Malformations.

In order that malformations can be understood, it is necessary to know the general principles on which the organs are developed. At first there is a collection of cells forming a thickening of the peritoneum on each side of the spinal column. If the embryo is to be a male, these collections develop into the testes; if a female, into the ovaries.

The other organs are developed as follows : In the primitive state three pairs of tubes or ducts are found running behind the peritoneum from the loins into the pelvis. Those nearest the front are the Müllerian or pronephric ducts ; those just behind them are the Wolffian, or mesonephric ducts ; and those farthest back are the metanephric ducts. In both male and female the metanephric ducts become the ureters, running down from the kidney on each side to the bladder. In the female the pronephric or Müllerian ducts are made use of, while the mesonephric or Wolffian ducts dwindle and practically disappear. In the male the reverse is the case : the Müllerian ducts dwindle, while the Wolffian ducts are made use of. The first kind of malformation that may result is that the embryo may make a mistake as to which sex it is intended to be, and both sets of ducts develop, so that a male may possess a uterus and vagina in addition to his own organs, or a female may possess organs commonly found only in the male.

The mistake may occur with the external as well as the internal organs, so that a male may have a vulva indistinguishable from that of the female, while a female may have more or less complete external male organs. When male and female characteristics are combined, the condition is known as *pseudo-hermaphroditism*. A true hermaphrodite is both male and female—that is, such a being possesses both ovary and testis ; but while this condition is not uncommon

in some of the lowest forms in the scale of creation, it is not found in the human race.

The further development of the female organs is as follows: The Müllerian ducts of the two sides join together in the lower part; and while the portions of the ducts that remain separate form the Fallopian tubes, the united portions form the uterus above and the vagina below. This mode of development accounts for the second type of malformation met with, namely, *double uterus* or *double vagina*, because sometimes the two Müllerian ducts fail to unite together; and according to the extent to which the union fails we may get various degrees of malformation, ranging from the extreme form, in which there are two separate uteri and two vaginæ, when the patient is said to have a *uterus didelphys*, to the least noticeable form, the *uterus septus*, in which the uterus externally looks much as usual, but has a partition all down the middle. In the intermediate form, the *uterus bicornis*, the lower part of the uterus has joined up, but the upper parts have remained separate, forming two horns. In this form, and in the case of *uterus septus*, the cervix and vagina may be either double or single.

With any form of double uterus a woman may menstruate and fulfil the functions of a wife and mother in such a way that no suspicion of the abnormality is aroused; but at times complications may occur.

At first there is no communication between the

vagina and the outside; then the vagina gradually grows down towards the surface, and at the same time the skin on the outside becomes pitted in to meet it; finally the thinned-out dividing membrane becomes absorbed or pierced, and so communication is established. Any failure in this process gives rise to the third type of malformation, that, namely, in which the vagina has no external opening. The condition is called *atresia of the vagina*, and it may remain unnoticed in childhood; but when the girl begins to menstruate, the menstrual products cannot escape, and consequently accumulate in the vagina, which may become greatly distended. The patient is said to have *retained menses*, and an operation becomes necessary in order to make an opening. When the retained menstrual products are liberated, they have something of the appearance and consistency of treacle.

The fourth type of malformation comprises cases in which some part of the organs does not get fully developed; thus, the uterus or vagina may remain very small, or one half of the uterus may remain undeveloped, whilst the other half attains its proper size. The last condition is known as *uterus unicornis*, and the undeveloped horn may be no larger than a Fallopian tube; consequently, if pregnancy should occur in such a horn, the course of events resembles what is found with tubal pregnancy.

2. Inflammations.

The common feature of all types of inflammation is that there must be a channel of infection; and in the case of the pelvic organs infection may be conveyed in several ways.

(a) The most important, because it is the most frequent, is infection of the vulva and vagina, travelling up through the vagina, uterus, and tubes, to the peritoneum; as a consequence, vaginitis, endometritis, salpingitis, and peritonitis, are successively set up.

(b) The second method is by injury to some part of the wall of the vagina or uterus, opening up the cellular tissue round these organs; infection derived from the outside, as in the previous case, travels up the vagina, and sometimes into the uterus, and, passing through the hole caused by the injury, reaches the cellular tissue and sets up pelvic cellulitis; this may go on to the formation of a pelvic abscess.

(c) The third method is infection from some part of the bowel; for example, an ulceration in the rectum may perforate the bowel wall and open into the cellular tissue of the left broad ligament, causing a pelvic abscess; or a coil of bowel may become adherent to the uterus, tubes, or ovary, when the same series of events takes place—ulceration, perforation, and abscess—in the adherent structure. Sometimes an inflamed appendix becomes adherent

to the right tube and ovary, causing inflammation there.

(d) When inflammation is present in the uterus, tubes, or ovaries, infection may be carried by the veins and lymphatics of these organs to other structures, either in the immediate vicinity or at a distance. These different modes of infection are illustrated diagrammatically in Fig. 5, and we may consider them briefly in succession.

(a) Small children are sometimes the subject of an inflammation of the vulva and vagina. It is known as *vulvo-vaginitis of children*, and is the result of want of cleanliness in most cases; in rare cases it is due to brutal assaults.

An acute vaginitis in older girls and women may be produced by a neglected pessary left too long in the vagina, or by some strong irritant introduced into the vagina, but the commonest cause is gonorrhœa. Vaginitis produced by this cause is associated with a copious yellow discharge. Very often the infection spreads up the urethra, causing pain on passing water, and the Bartholinian ducts are also liable to be affected, leading to a Bartholinian abscess, as indicated in the diagram.

The infection commonly spreads upwards into the uterus, producing endometritis, and then it passes along the Fallopian tubes, setting up salpingitis. Through the open, fimbriated end of the tube the infection can reach the peritoneal cavity, as shown on the left side of the diagram. When the inflammation

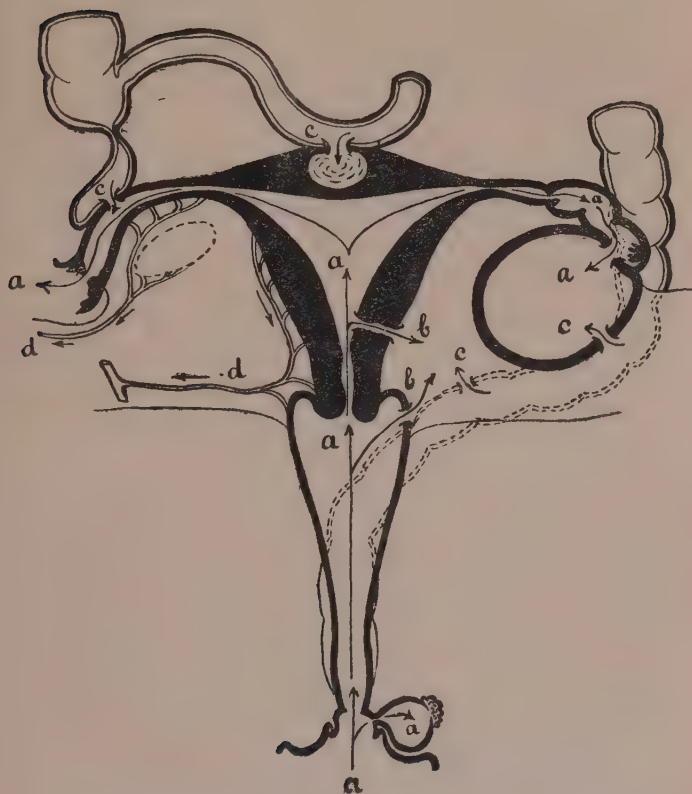


FIG. 5.—DIAGRAM OF THE CHANNELS OF INFECTION OF THE PELVIC ORGANS.

a, Infection along the mucous membrane of the genital tract; *b*, infection of the cellular tissue due to injury; *c*, infection from the bowel; *d*, systemic infection along the veins and lymphatics coming from the pelvic organs.

in the tube is severe, the fimbriated end gets closed up, and the tube becomes greatly distended with pus; this condition is called "pyosalpinx." If there should be an ovarian cyst present, the tube gets adherent to it, ulceration of the adjacent walls takes place, and the contents of the ovarian cyst become infected, so that the cyst is converted into an abscess. The tube and ovary together then form one continuous abscess cavity, the condition being known as a "tubo-ovarian abscess." Such a complication is shown on the right side of the diagram. Patients suffering from pyosalpinx become very ill, and an operation is required to remove the pus sacs; as a rule it is necessary to remove both tubes and ovaries.

These patients are condemned to sterility, not merely because of the removal of the organs, but because, even before removal, the organs are too disorganized to make conception possible.

The consequences of a neglected gonorrhœa in a woman are therefore very grave and far-reaching.

Salpingitis and peritonitis may also follow infection of the uterus during labour.

(b) The second form of infection is usually found as the result of complicated labour, whereby some injury to the wall of the vagina or uterus occurs; and if then any infection takes place, it travels up into the cellular tissue of the broad ligament, as shown on the right side of the diagram, and pelvic cellulitis is set up. As a rule this goes on to the formation of an abscess. If the uterus or vagina be injured during a

gynæcological operation, and strict asepsis has not been preserved, a similar result may follow.

(c) Infection from the bowel may take place in various ways; four such infections are shown in the diagram. Thus, in a case of appendicitis, when the appendix is lying in the pelvis, it may become adherent to the right tube and ovary; at the site of adhesion ulceration takes place, and then perforation, with the result that the infection of the appendix is communicated to the tube or ovary, or both. Or a coil of bowel may become adherent to the uterus, and either set up an abscess in the uterine wall, or, if there should happen to be a fibroid tumour close at hand, the tumour itself may become infected and suppurate. Similarly, a portion of the bowel—say the sigmoid—may become adherent to an ovarian cyst, as shown on the right side of the diagram, forming an ovarian abscess. Or, again, if ulceration takes place in the wall of the rectum, where it passes down below the peritoneum in contact with the cellular tissue of the left broad ligament, perforation of the bowel may occur, and an abscess form in the broad ligament. There have been cases in which a fish-bone that has been swallowed has passed safely down till it has reached the rectum, and there it has stuck and pierced the wall of the bowel, leading to a pelvic abscess. When the abscess has been opened, the fish-bone has been recovered.

It must not be forgotten that infection may occur in the reverse direction. Thus, a pyosalpinx or a sup-

purating ovarian cyst may become adherent to the bowel, or even to the bladder, with the result that perforation takes place, and is followed by a discharge of pus through the bowel or the bladder.

In bad cases of pyosalpinx, one of the great difficulties of operation is the occurrence of bowel adhesions. Sometimes the bowel is necessarily torn in the separation of the adhesions, and in some cases it has been necessary to remove portions of the damaged bowel.

(d) Lastly, in cases of severe inflammation of the uterus and tubes, particularly such as may occur in puerperal fever, the veins and lymphatics passing from the diseased areas, as shown on the left side of the diagram, may be loaded with infective material, which becomes distributed in this way through the whole system. Such a systemic infection is called *sapremia* or *septicæmia*, according to the nature of the infective material. In other cases the blood in the veins may become clotted, or thrombosed, as it is called, and the thrombus may spread to the larger veins, and so reach the large iliac veins, bringing back blood from the legs. If thrombosis extends into the iliac veins, the legs swell considerably. This is one form of what is called *white leg*.

It is a complication that may also occur after operations.

Another danger is that a part of the clot in the veins may become detached. It is then carried up by the blood-stream to the right side of the heart, and thence by the pulmonary artery to the lungs ;

when, by reason of the dividing up of the artery, the clot can go no farther, it stops and blocks up the vessels beyond. This is known as "pulmonary embolism."

Such an embolus is not necessarily the result of sepsis, for after such an operation as hysterectomy or ovariectomy, where the bloodvessels are tied, the blood in the veins from the site of the ligature always clots as far as the next branch, this part of the vein being no longer in use, and a portion of this normal clot may become detached and form an embolus.

Happily, this accident is rare.

3. Displacements.

Any of the pelvic organs may become displaced, as the result of the ligaments that keep them in place becoming relaxed. Thus, if the broad ligament gets stretched, the tube and ovary of that side may drop back behind the uterus. A prolapsed tube gives no signs, but the prolapsed ovary with which it is always associated may be the cause of pain and tenderness. If the various ligaments that hold the uterus in place become relaxed, especially the broad ligaments, a backward displacement may occur. This is known as *retroversion of the uterus*, and, as the uterus may be bent backwards as well as turned over bodily, we may get *retroflexion* combined with retroversion. Sometimes this condition causes no trouble, and is discovered only by accident, and in other cases it is

the cause of pain (especially backache), menorrhagia, and leucorrhœa.

If, in addition to relaxation of these ligaments, the floor of the pelvis is weakened, as may happen particularly as the result of child-bearing, the uterus may not only turn backwards, but also fall to a lower level in the pelvis. This is called *prolapse of the uterus*. In severe cases this prolapse is associated with weakness and stretching of the vaginal walls, and with tearing or stretching of the perineum, whereby the normal support at the lower part of the pelvis is lost.

The uterus may then get lower and lower, till first the cervix and then the whole uterus comes to be outside the vulva. This is called *total procidentia*, and the effect is that the vagina is practically turned inside out. The way in which this comes about is that, once the uterus lies low in the vagina, the muscles in the vaginal walls and in the abdomen make expulsive efforts to drive the uterus out, just as during labour spontaneous expulsive efforts are made to drive the child's head out, once it comes to be in the vagina. In the process of expulsion the uterus sometimes becomes remarkably lengthened and stretched out, so that it may attain as much as twice its proper length. The uterus is then said to be in a condition of *hyperplasia*. The elongation affects especially the lower part of the body of the uterus and the cervix.

We have seen that in cases of prolapse and

procidentia the vaginal walls become relaxed and lengthened; the result is that, even while the uterus remains still fairly high up, the vaginal walls may bulge downwards, especially when the patient strains, and form swellings which can be seen and felt outside.

Such a swelling produced by the anterior vaginal wall is called a *cystocele*, which means, literally, a tumour of the bladder, because the bladder wall is intimately associated with the anterior vaginal wall, and if the latter comes down the former must come down with it. Similarly, a swelling produced by the posterior vaginal wall is called a *rectocele*, because the wall of the rectum comes down with it.

Either a cystocele or a rectocele may exist by itself, or both may be present, without any prolapse of the uterus existing at the same time; and sometimes there may be a prolapse of the uterus without either cystocele or rectocele. In severe forms of prolapse and procidentia, however, cystocele and rectocele nearly always accompany the descent of the uterus.

Displacements are treated either by the insertion of pessaries or by operation. We shall have something to say later on about both methods.

4. Abnormal Pregnancy.

For the most part, abnormal pregnancy is a subject that specially concerns the obstetrician among doctors and the midwife among nurses. The gynæcologist and the gynæcological nurse have, however, to do with certain aspects of it, namely, miscarriage in the

early months, and extra-uterine pregnancy ; whilst it also falls within the province of the gynæcologist to remove a full-time child by abdominal section in certain cases where delivery by the natural passages is impossible. This interesting operation is known as "Cæsarian section." We need not say anything further about it here, but shall have occasion to refer to it again when speaking of abdominal operations. We must say a few words, however, about miscarriages and extra-uterine pregnancy.

Miscarriage.—It may happen that in the early months of pregnancy the course of events becomes disturbed, either by an accident, or by some severe mental shock, or by some disease affecting either the uterus or the embryo. The result is the same in any case ; the nutrition of the embryo is arrested, the embryo dies, and then the uterus makes an effort to get rid of it. As a rule the first indication of trouble is hæmorrhage, for the attachment of the membranes and placenta becomes partly or completely separated, and we then speak of the case as one of *threatened abortion*.

If the canal of the cervix dilates, and the separation is complete, the uterus expels the embryo and placenta completely, and there is no further trouble. But in some cases hæmorrhage goes on and on, and the uterus is not able to get rid of its contents—this is known as a *missed abortion* ; whilst in other cases the greater part of the contents is dislodged, but some portion, perhaps only a fragment of the

placenta, remains behind; and as long as it so remains, hæmorrhage continues, the condition being one of *incomplete abortion*. In other cases, again, the uterine contents remain unexpelled, and infection occurs; then the patient very soon shows signs of blood-poisoning. When there is either prolonged hæmorrhage or threatened sepsis, the gynæcologist has to interfere, and dilate the cervical canal and remove the uterine contents.

Extra-Uterine Pregnancy.—A fertilized ovum should travel down the tube and become imbedded in the uterine mucous membrane. But at times, for reasons at present not understood, the developing ovum stops short in the tube. There have been cases, indeed, where the ovum has not gone even as far as that, but has remained in the ovary; this rare condition is known as *ovarian pregnancy*. The development of an ovum in the tube is called a *tubal pregnancy*. Now, the tube has a relatively small diameter and relatively thin walls, and is in no way adapted to accommodate an object that may grow to the size of a football; consequently the career of an ovum in the tube is beset with difficulties and dangers.

One risk is that hæmorrhage may occur in the ovum, producing what is called a *tubal mole*; and if the fimbriated end of the tube has remained open, the tube endeavours to expel the mole into the peritoneal cavity, producing *tubal abortion*, in much the same way that the uterus that has a mole inside it endeavours to get rid of it as an ordinary abortion.

The difference is that, whereas the uterine abortion is associated with external bleeding that can be seen, the tubal abortion is associated with internal bleeding which may not be detected until the patient is showing the grave constitutional signs of internal hæmorrhage.

In most cases the fimbriated end of the tube does not remain open, but closes completely ; then, as the ovum enlarges, whether by natural growth or by the occurrence of hæmorrhage, there comes a time when the stretching capacity of the tube is strained beyond what the tube can bear, and rupture occurs. Occasionally the rupture allows the foetus to pass freely into the peritoneal cavity covered by its membranes, whilst the attachment of the placenta to the tube remains undisturbed ; and when this happens it is possible for the child to go on developing in the abdomen without any suspicion being aroused in the mind, either of the patient or of her doctor, that the child is not in the uterus in the normal way. Then comes the full time ; signs of labour come on, but, as the child is in the abdominal cavity, it cannot get out unless the abdomen is opened ; and if this is not done the child dies, the fluid in which it lies gets absorbed, and the body of the child shrinks. The later history of the case is either that the child gets mummified and remains in the abdomen for years, whilst perhaps its younger brothers and sisters are coming into the world in the conventional way ; or else the sac containing the child may become adherent

to a coil of bowel and get infected, when the symptoms are those of an abscess in the abdominal cavity.

Going back now to the time of the rupture of the tube, it often happens that the attachment of the placenta is torn with the tearing of the tube, and free internal hæmorrhage takes place. This may be so severe that the patient dies within twenty-four hours, or within two or three days, unless surgical aid is forthcoming. Sometimes the rupture of the tube takes place, not in the part of the tube that is towards the peritoneal cavity, but in the part underneath, between the two layers of the broad ligament. Hæmorrhage may then take place into the broad ligament, and the foetus dies; or, again, there is the possibility that the placental attachment may be spared, and the child may then continue to eke out a precarious existence, developing within the folds of the broad ligament. Cases have been known where such a foetus has grown to a full-time child; but at the end of its nine months it is no better off than the child that develops in the peritoneal cavity, and it comes to an equally untimely end.

This does not conclude the whole chapter of accidents; because when a child has grown to be five or six months old in the broad ligament, the tissues of the broad ligament may feel themselves unable to stand the strain any longer, and a further rupture occurs, this time into the peritoneal cavity. This rupture may be fatal to the child and associated with a dangerous hæmorrhage for the mother; or, again,

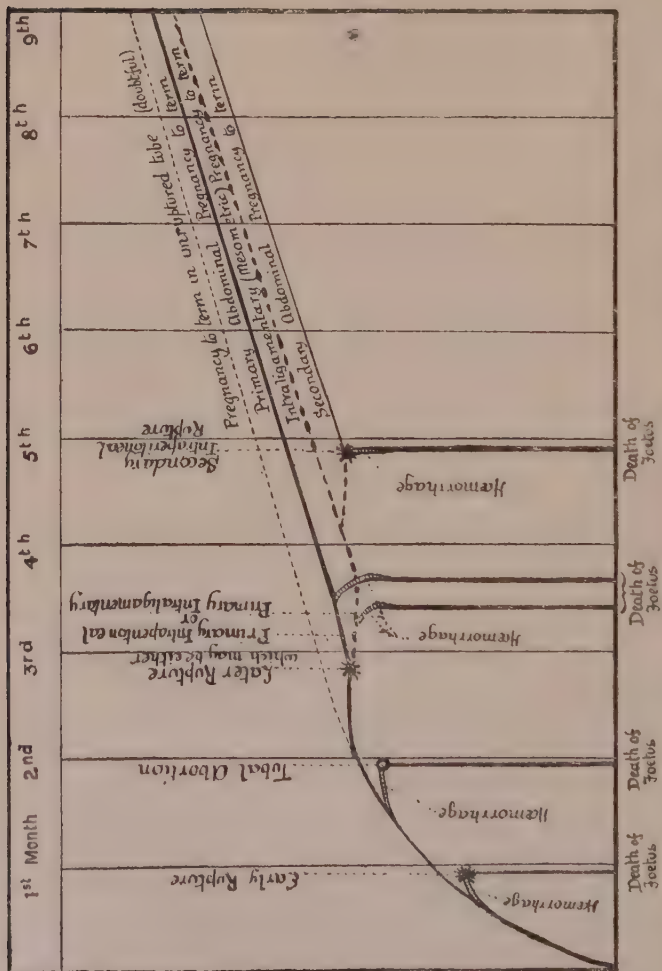


FIG. 6.—DIAGRAM TO ILLUSTRATE THE DEVELOPMENTS AND DANGERS OF EXTRA-UTERINE PREGNANCY.

the fœtus may survive and get as far as the original abdominal baby or the broad ligament baby; but it gets no farther than they do, and at the full time its fate is sealed.

The various courses that may be taken by an extra-uterine pregnancy are shown in the diagram in Fig. 6, and they may be summarized in the following table. It will readily be understood that the complication of extra-uterine pregnancy is one of extreme danger to the mother, and the modern treatment, by which many lives have been saved, is to operate as soon as possible in every case, and remove the pregnant tube.

COURSE OF EXTRA-UTERINE PREGNANCY,

- A. Early tubal rupture (third to sixth week). Fœtus perishes.
- B. Tubal abortion (sixth to eighth week). Fœtus perishes.
- C. Later tubal rupture (sixth to twelfth week).
 - I. Primary intraperitoneal rupture.
 - 1. Fœtus perishes.
 - 2. Fœtus survives, and goes on as abdominal pregnancy to term.
 - II. Intraligamentary rupture.
 - 1. Fœtus perishes.
 - 2. Fœtus survives.
 - (1) Mesometric pregnancy goes on to term.
 - (2) Secondary intraperitoneal rupture.
 - (a) Fœtus perishes.
 - (b) Secondary abdominal pregnancy goes on to term.

CHAPTER III

DISEASES OF THE PELVIC ORGANS—*Continued*

5. Tumours.

TUMOURS are of two kinds—cystic and solid; and some tumours possess both characters. Another way in which tumours may be divided is into innocent or benign and malignant tumours. All kinds are found in connection with the pelvic organs. It will be convenient to consider first the cysts, and then the solid tumours.

A. Cysts.—A cyst is a swelling containing fluid, and cysts arise in cavities whose walls are able to secrete fluid. In many cases this cavity is a tube whose end or ends have become blocked up.

Fig. 7 shows in diagrammatic form the various positions in which cysts are found in the pelvic organs.

In the vulva *Bartholinian cysts* (Fig. 7, *b.*) are found; they arise from the closure of the orifice of the Bartholinian duct, whereby the mucous fluid secreted by the Bartholinian gland is unable to escape, and so accumulates in and distends the duct until the swelling

may attain the size of a hen's egg. A Bartholinian cyst occupies the lower end of the labium majus.

Vaginal cysts (v.) and *broad ligament cysts (b.l.)* are sometimes present. Their origin is interesting. It will be remembered that in speaking of the development

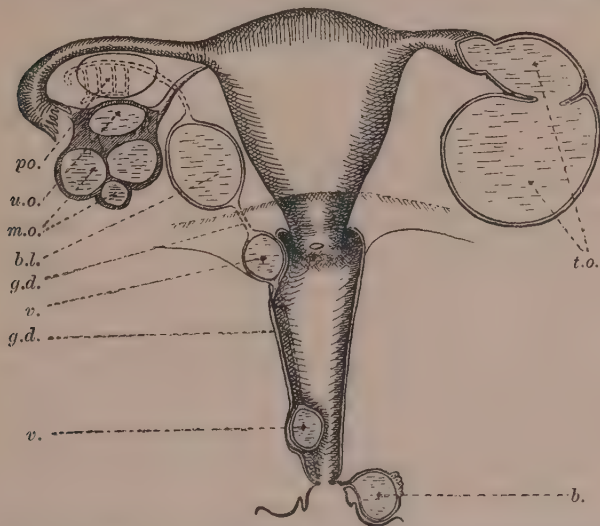


FIG. 7.—DIAGRAM SHOWING THE POSITIONS IN WHICH CYSTS MAY OCCUR IN THE PELVIC ORGANS.

b., Bartholinian cyst; *b.l.*, broad ligament cyst; *g.d.*, Gartner's duct; *m.o.*, multilocular ovarian cyst; *po.*, parovarian cyst; *t.o.*, tubo-ovarian cyst; *u.o.*, unilocular ovarian cyst; *v.*, vaginal cysts.

of the pelvic organs we referred to the Wolffian duct, which plays a part in the development of the organs of the male, but commonly dwindles and all but disappears in the female. Sometimes remnants of the duct and of the small ducts associated with it

persist in some part of its course from the broad ligament to the vulva under the name of Gartner's duct (*g.d.*) ; and in such remnants fluid may collect, forming cysts. In the upper part of the broad ligament, between the tube and the ovary, some remnants of ducts are always found ; they are called the "parovarium," and a cyst forming in this situation is known as a *parovarian cyst* (*po.*).

The most important cysts found in the pelvis are *ovarian cysts*. There are three special kinds. There is first a cyst with only one cavity, the cyst being on this account called *unilocular* (*u.o.*). It grows from that part of the ovary which is next to the broad ligament, and often contains a warty growth known as a "papilloma." When such a cyst gets large it may rupture, as its wall is usually thin, and the papilloma then becomes exposed in the peritoneal cavity. Once this happens, the tumour may behave like a malignant one, because the papillomata may get detached and invade other areas in the peritoneum.

The second kind of cyst has many cavities, and is therefore called *multilocular* (*m.o.*). Some of the cavities may be filled with a clear, watery fluid, others with a thick, sticky mucus ; and if any bleeding takes place into the cavities, as sometimes happens, the contents may appear chocolate or brown in colour.

The mucous cavities are lined with gland tissue, and when this is abundant the tumour is called a *multilocular ovarian cystic adenoma*. Sometimes this gland tissue presents characters resembling the

glandular carcinoma found in the breast, bowel, or stomach, and the tumour is then properly called a *malignant ovarian adenoma*. In many cases these malignant ovarian tumours are secondary to—that is, result from—carcinoma already existing elsewhere.

The third kind of cyst is the *dermoid*. It is sometimes multilocular, but more often unilocular. It has the remarkable peculiarity of containing various structures, which are usually developed from the epithelial elements in the skin—hence the name. These structures are hair, teeth, and nipples (such as are found on the breast); and in addition pieces of bone and cartilage are also found sometimes.

Dermoids and multilocular cysts are derived from the outer portion of the ovary.

Sometimes a Fallopian tube that has become distended with watery fluid—a condition called “hydro-salpinx”—may become adherent to an ovarian cyst. Perforation of the dividing wall takes place, and the two cavities are thrown into one; the resulting cyst is described as “retort-shaped,” and is called a “tubo-ovarian cyst” (*t.o.*). Any of the cysts just described may be present on one side of the body only, or on both; and they are liable to various accidents and complications, such as rupture, infection and suppuration, and twisting of the pedicle or stalk by which they are attached. The last two accidents are attended by severe pain, and all three may be followed by a grave, and even fatal, peritonitis.

Ovarian cysts sometimes attain an enormous size.

The largest that I have had occasion to remove was 32 pounds, but cases over 100 pounds have been recorded. A large tumour may cause serious symptoms by impeding the movements of the heart and respiration, and by causing injurious pressure on the surrounding organs. In consequence of all these dangers, it is advised that an ovarian tumour should be removed as soon as possible after it has been discovered.

B. Solid Tumours.—Just as cysts develop in places where there are cavities, so solid tumours develop from the solid tissues. Any part of the body can grow only tumours composed of the same elements as are contained in that part of the body. A tumour is formed by the multiplication of cells of the same kind as those present where the tumour is growing. In other words, the tissue cells breed true. Thus we get—

Lipomata, or fatty tumours, from fat.

Fibroma from fibrous tissue.

Myoma from muscular tissue.

Osteoma from bony tissue.

Sarcoma and myxoma from connective tissue.

Angelioma from bloodvessels.

Neuroma from nerve tissue.

Adenoma from glandular tissue.

Epithelioma from epithelial tissue.

Carcinoma from the epithelial cells of the gland tissue.

If a tissue contains fibrous and muscular tissues, it

may yield a fibromyoma (usually called a "fibroid" in the uterus); a tissue containing fibrous and gland tissues (as is found in the breast) may yield a fibroadenoma; a tissue containing glandular and muscular tissue (as in the uterus) may produce an adenomyoma. Moreover, the tissues of the body have a pedigree that goes very far back. In the early embryo the minute ovum is built up of two layers of cells, the outer being the epiblast and the inner the hypoblast. Between them very soon appears a third layer, known as the "mesoblast."

From the epiblast is derived the epithelium covering the whole body, together with all such structures as are modifications of the epithelium—for instance, hair, teeth, and nails; whilst the central part of the nervous system, the mouth, anus, and vagina are also derived from the infoldings of the epiblast.

From the hypoblast is derived the lining of the alimentary canal and of all its outgrowths, such as the lungs and liver, the pleural and peritoneal cavities, the lining of the bladder, ureters, urethra, Fallopian tubes and uterus, and the vagina. The mesoblast produces all the other tissues, such as the connective tissue of the body generally, fibrous tissue, fat, muscle, the heart and bloodvessels, bone, and cartilage. It will be understood, therefore, that an epithelioma, or, as it is now generally called, a "squamous-celled carcinoma," is found only where there are cells derived from the epiblast. Adenoma and glandular carcinoma occur only in tissues derived

from the hypoblast, and all other tumours, including sarcoma, are the product of tissues derived from the mesoblast.

All tumours are divided into two great classes—the simple or benign, and the malignant. The difference between them is that simple tumours do not come back after they are once removed, and do not spread to distant parts of the body; whilst malignant tumours—viz., carcinoma and sarcoma—show a tendency to return after removal, and spread to other parts of the body, forming what are called “secondary growths.” The “primary growth” is the name given to a malignant tumour at the spot where it is first found. Carcinoma and sarcoma have a different way of spreading. Carcinoma spreads by means of lymphatics, and the lymphatic glands next in the course of these lymphatics become enlarged by deposits of the growth. For example, with carcinoma of the breast the glands in the axilla become enlarged; with carcinoma of the vulva, the glands in the groin; and with carcinoma of the uterus, the iliac glands. Sarcoma, on the other hand, spreads by means of the bloodvessels—that is, the veins leading from the part affected. The tumours found in the pelvic organs are the following:

(i.) **In the Vulva.**—*Carcinoma* (epithelioma) may attack any part of the vulva. The most frequent sites are the clitoris and the labia majora; whilst *glandular carcinoma* may arise in connection with the Bartholinian gland.

Fibroma, *lipoma*, and *myoma*, may occur in the tissue of the vulva, generally in connection with the greater lips; and in the same position a rather soft and flabby tumour with a narrow stalk or pedicle, called a *fibromyxoma*, is also found. It is composed of a mixture of the fibrous and soft connective tissues.

(ii.) **In the Vagina.**—The vagina is not often the seat of tumours, and such as are found there are mostly malignant—namely, carcinoma and sarcoma. It is not an uncommon thing, however, for a carcinoma of the cervix to spread to the vagina.

(iii.) **In the Uterus.**—Several kinds of tumour are met with in the uterus. The innocent or benign ones are fibromyoma (known as “fibroid”), adenoma, and adenomyoma; the malignant ones are sarcoma and carcinoma. We may say a few words about each of these.

Uterine fibroid, *myoma*, or *fibromyoma* — for all these terms are used—is the commonest form of uterine tumour, and it presents many varieties. Thus, there may be only one tumour or there may be many. The uterus may be enlarged and retain the normal uterine shape, or it may be absolutely distorted with tumours growing out of it in all directions. A fibroid always arises in the substance of the wall of the uterus, and if it retains this position it is spoken of as an *interstitial fibroid*. As the tumour enlarges it tends to grow either into the cavity of the uterus, when it is called a *submucous* or *intra-uterine*

fibroid, or into the peritoneal cavity, when it is said to be *subperitoneal*. If one of these subperitoneal fibroids grows out so far that it remains attached to the uterus merely by a stalk, it is called a “*pedunculated fibroid*,” and if a submucous fibroid grows so far into the cavity of the uterus that it is attached to the inner wall of the uterus by a stalk, it is spoken of as a *fibroid polypus*. A polypus may also be formed by a growth of the mucous membrane only, and then it is described as a “*mucous polypus*.”

When a fibroid develops in the wall of the cervix it receives a special name—that of *cervix fibroid*. These tumours are rather remarkable in that they are generally single; they are comparatively fixed owing to the attachment of the cervix, and consequently they are not able, as a rule, to rise out of the pelvis. When they have grown large enough to fill up the pelvis they cause symptoms of obstruction.

The most important symptoms produced by fibroids are hæmorrhage, pain, and pressure. The hæmorrhage is due to invasion of the mucous membrane, and, consequently, with those varieties that remain interstitial and subperitoneal there may be no hæmorrhage at all. Pain and pressure both depend upon the position of the tumour. When a fibroid is confined in the pelvis, pain and pressure symptoms may appear early, because the surrounding organs become pressed upon. If it is free to grow up into the abdominal cavity, there may be neither pain nor pressure symptoms for a long time; but when a mass of fibroid

tumours becomes very large indeed, the abdominal organs get pressed upon, and there may be serious interference with breathing and the action of the heart.

Fibroids are liable to undergo degenerative changes. In some cases they soften and become almost cystic, and in other cases necrotic, these changes being due to interference with the blood-supply of the tumour; and when a fibroid becomes cystic, or even only softened, it may get infected and suppurate. Another curious degenerative change is a deposit of chalky or calcareous matter in the tumour, and in this way the tumour may be converted into a stony mass.

If fibroids are complicated by the occurrence of pregnancy, grave dangers may arise during and after labour, and even during the pregnancy. There has been a mischievous tradition that fibroids cease to give trouble at the change of life; and many women have been persuaded to follow this will-o'-the-wisp, suffering hæmorrhage and pain for many years, until they have been led where the will-o'-the-wisp was said to lead its victims—namely, into the swamp of acute danger—and they have either died of the complications that have set in, or have had to pass through the ordeal of an operation rendered tenfold more dangerous than it would have been in the earlier stages.

An *adenomyoma of the uterus* somewhat resembles a fibroid, and, like it, causes hæmorrhage. The difference is that, instead of being composed

almost entirely of muscular and fibrous tissue, it is made up of muscular and glandular tissue. And whereas a fibroid is nearly always contained in a capsule which marks it out sharply, and out of which it can be readily shelled, an adenomyoma is more diffused in the substance of the uterine wall, and cannot be shelled out.

An *adenoma of the uterus* is a mass of rather soft consistency that grows inside the uterus. It causes irregular bleeding in much the same way as carcinoma does, and it is apt to undergo changes which render it almost, if not quite, indistinguishable from carcinoma.

Uterine sarcoma is a rather rare disease. It generally causes symptoms exactly like carcinoma, and in many cases it can only be distinguished from carcinoma by microscopic examination.

Uterine carcinoma presents two forms which have some rather strikingly different characters—namely, carcinoma of the body of the uterus and carcinoma of the cervix.

Carcinoma of the body is hardly ever found in women who have borne children; it is practically confined to childless women, whether married or single. The chief indication of its presence is irregular bleeding, and, as it does not usually occur until after the change of life, the occurrence of irregular hæmorrhage after this period is always a very suspicious feature. The growth remains for a long time confined to the uterus, and consequently the results of

operation are very good, because the tendency to a return of the growth is relatively slight.

Carcinoma of the cervix usually comes on between the ages of forty and fifty, and only in women who have borne children. It is indicated by irregular hæmorrhage, and later by foul-smelling, watery discharge, pain, and wasting. No woman who has irregular hæmorrhage should neglect to seek advice, and submit to examination at the earliest possible moment, because if it should turn out that the bleeding is due to some simple condition, it will be possible to treat this, and in any case no harm is done by the investigation; whilst if it should prove to be a case of cancer, everything depends on the early recognition of the disease. Very favourable results follow early operation, but many women have sacrificed their lives by waiting to seek advice until the growth has become so extensive that its removal is impossible.

(iv.) **In the Ovaries.**—We have already spoken of the commonest forms of ovarian tumour—namely, ovarian cysts. The ovary may also be the seat of solid tumours, of which the commonest forms are fibroma, sarcoma, adenoma, and carcinoma.

A *fibroma of the ovary* is a hard tumour, which cannot be distinguished from a uterine fibroid except by its position.

Sarcoma of the ovary is only distinguished microscopically from carcinoma; it is, happily, rare.

Adenoma and carcinoma of the ovary resemble one another closely, and sometimes the only indication as

to the true nature of the tumour is the after-result, in that there is no tendency to return or dissemination of a simple adenoma, whilst carcinoma shows both these tendencies. These tumours give rise to little in the way of symptoms in the early stages, and may be discovered by accident. Later on they invade the peritoneum, and spread to organs round about as well as to distant organs, and cause a great effusion of fluid into the peritoneal cavity; and in this advanced condition it is found impossible to remove the disease, because all the pelvic organs are matted up into one mass of growth densely adherent and fixed.

(v.) **In the Fallopian Tubes.**—The tumours found in these structures are so rare as to be unimportant; the principal variety is carcinoma.

(vi.) **In the Uterine Ligaments.**—Occasionally a fibroid tumour is found developing in connection with the round ligament or in the broad ligament. In the latter position it may grow to a very large size.

6. Injuries.

The vulva may be injured by a fall on some sharp object with the legs apart, or by the breaking of a chamber vessel. The vagina may be injured by long-continued wearing of a pessary, leading to ulceration of the vaginal wall into the rectum or bladder; such a communication is called a *recto-vaginal* or a *vesico - vaginal fistula*. A fistula may also result

from an injury in the course of an operation. But most of the injuries found in the pelvis are produced during labour. Thus, the cervix may be lacerated, or the wall of the uterus or vagina torn through, or the perineum may be ruptured by the passage of the child's head or shoulders. In the case of the perineum, the tear may go through into the rectum, leading to want of control over the bowel. Injuries to the uterus and vagina may be exceedingly serious, leading to a rapidly fatal result from hæmorrhage or blood-poisoning.

7. Functional Disorders.

Under this heading we may include disorders of menstruation, dyspareunia, sterility, and pruritus—although, as a matter of fact, these may all be regarded as being, in most cases, symptoms of other disorders.

(i.) **Disorders of Menstruation.**—*Amenorrhœa* is the name given to the stoppage of the monthly courses. It is a normal occurrence in pregnancy, and, in fact, the date of the last period is the usual guide to the calculation of the duration of pregnancy and the date of the expected confinement. Amenorrhœa in young girls, and occasionally in older women, may be due to constitutional ill-health, such as results from anæmia and tuberculosis; and it may follow certain acute fevers, such as typhoid. In the type of malformation known as “atresia of the vagina,” in which there is closure of the vaginal opening, there

is no flow of menstrual blood, and therefore there is an apparent amenorrhœa ; but menstruation may be actually going on, the products being retained in the vagina.

Menorrhagia is the name given to indicate excessive losses at the time of the periods. It is usually a sign of disease, but it is not an uncommon thing for menstruation to be unduly free for a time after it first comes on, and such an occurrence is not a cause for anxiety. When the loss is not only with the periods, but also in the intervals, it is described as *metrorrhagia*. This is invariably a sign of something being wrong. The chief conditions which cause menorrhagia are fibroid tumours, endometritis, inflammatory disease of the appendages, and anything causing congestion of the pelvic organs ; whilst the principal causes of metrorrhagia are tumours of the uterus and vagina (especially fibroids, polypi, and carcinoma), extra-uterine pregnancy, and threatened miscarriage and the retention of portions of membrane or placenta after a miscarriage or confinement.

It is evident from these facts that a woman who has irregular discharges of blood should seek advice and submit to an examination without delay. The condition may be a simple one that can easily be put right, and, on the other hand, it may be that most serious of all uterine diseases, cancer, in which case the woman's life may be saved by prompt treatment, whilst delay means early death.

Nurses may do an incalculable amount of good by

persuading timid and nervous women to seek advice early ; they can save them from the fatal mistake of letting things slide, on the supposition that the bleeding is due to "change of life," by pointing out that hæmorrhage is never due to the "change of life," but always to disease. Every gynæcologist is repeatedly obliged to utter those tragic words, "Too late!" when dealing with uterine cancer, and "too late" means the death from cancer of thousands of women every year. By securing the verdict "There is yet time," instead of the verdict "It is too late," many lives can be saved every year and many others can be prolonged, and nurses can play a conspicuous part in bringing about this result.

Dysmenorrhœa. — Many women suffer at their monthly periods ; a small proportion (about one-third) have no pain at all. Pain may vary from slight aching to pain of such severity that it causes utter prostration ; there is no sharp line of distinction, but all the severer kinds of monthly pain are called "dysmenorrhœa." Fortunately, much of this pain can be relieved by medicinal, hygienic, or operative measures. In one rather curious form the patient passes a kind of membrane every month ; as soon as the membrane is expelled the pain is relieved. This is known as *membranous dysmenorrhœa*.

(ii.) **Dyspareunia.**—Some married women have pain during intercourse, and this kind of pain is called "dyspareunia." It is often due to conditions that can easily be remedied, such as rigidity of the hymen,

narrowing of the vaginal orifice, and tender or inflamed spots about the vulva. In other cases the cause is more deep-seated; for example, it may be due to inflammatory conditions of the uterus, tubes, and ovaries. Some young married women are subject to a painful contraction of the muscles round the vaginal orifice; this condition is called *vaginismus*.

(iii.) **Sterility** is due to a variety of causes; anything that produces dyspareunia may lead to sterility, merely by preventing proper intercourse. There are various kinds of malformation that produce the same result, the ovaries or uterus being insufficiently developed. In a third group sterility is caused by inflammation of the genital passages, such as endometritis or salpingitis. This kind of sterility may come on later in a woman who has already borne one or more children. In a fourth group the woman is not truly sterile, because she is able to conceive; but she cannot bear living children, every pregnancy ending in a miscarriage. This may be brought about by a deep tear in the cervix, a displacement, an endometritis, or it may be the result of syphilitic infection. Lastly, it must be borne in mind that the cause of sterility may reside, not in the wife, but in the husband.

(iv.) **Pruritus**.—By this is meant irritation or itching. It is often due to excessive leucorrhœa (whites), when it can be relieved by simple douching. In other cases it is the result of a chronic inflammation of the

skin, *vulvitis pruriginosa*, or of a curious atrophic process known as *kraurosis vulvæ*. In obstinate cases, when no relief can be obtained by local applications, it is sometimes necessary to remove the affected area by dissection.

CHAPTER IV

PREPARATION FOR EXAMINATION

Positions.

WE shall first consider the positions in which a patient may be placed for examination.

1. **The Dorsal Position.**—The patient lies flat on her back in bed or on a couch. Nearly every examination is begun with the patient in this position, because it is the best for examining the abdomen, and the breasts if necessary. When there is a tendency for the abdominal wall to be held rigid, it is an advantage to have the legs drawn up a little; but if they are drawn up too much, the lower part of the abdomen cannot be palpated properly. The head and shoulders should be slightly raised, and the patient should be quite comfortable, so that she may leave all her muscles relaxed.

If the patient is in bed, the dorsal position is the best for a bimanual examination. For this purpose the knees are to be drawn well up, and allowed to fall apart as far as possible; the physician sits or kneels facing towards the patient's head; the hand nearer to the patient is passed under the nearer knee to make

the vaginal examination, whilst the other hand is placed on the abdomen. During these manipulations the bedclothes should be turned right down below the patient's knees, leaving only the sheet, which should be turned far enough to expose the abdomen while the pubes is covered. The patient's night-dress is drawn up to her chest, and on the chest and upper part of the abdomen a shawl or small blanket is placed to keep her warm.

2. **The Lateral Position.**—When it is necessary to inspect the vulva, the dorsal position is not suitable, and if the patient is in bed or on an ordinary couch the lateral position is adopted. This position is also suitable for a vaginal examination, and some physicians employ it for bimanual examination. As a rule the patient lies on her left side, because most physicians use the right hand; but if the physician is ambidextrous, either the left or the right side may be adopted, according to the position of the bed. The patient lies on her side, with the knees drawn up as far as possible, the buttocks projecting well over the side of the bed, and the head resting on a pillow placed obliquely in such a way that the upper half of the patient is almost across the bed.

The bedclothes are turned up at the side, and the nightdress is drawn up over the hips.

3. **Sims's Position** (Fig. 8).—This is a modification of the lateral position. The patient lies on the left side as regards her pelvis, but as regards her chest she lies almost on her face, the left arm being drawn

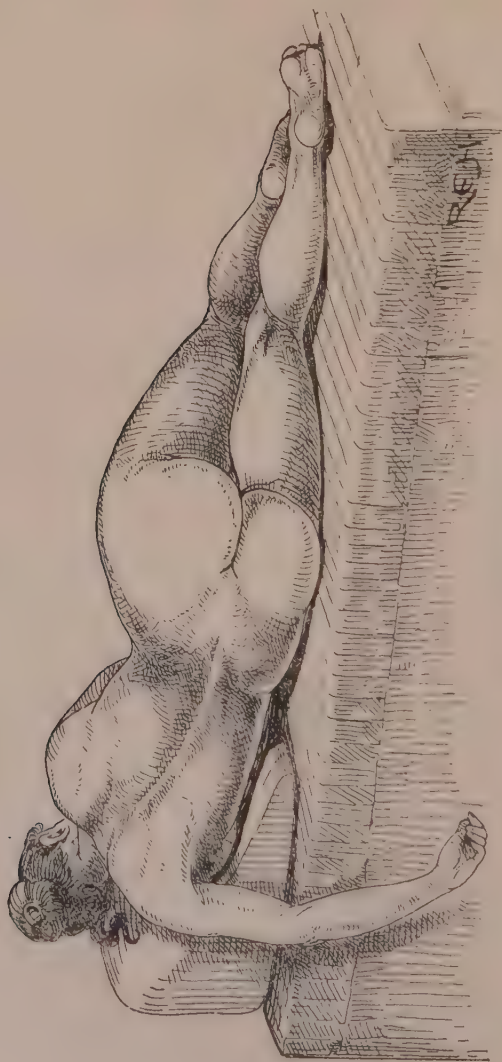


FIG. 8.—Sims's Position.

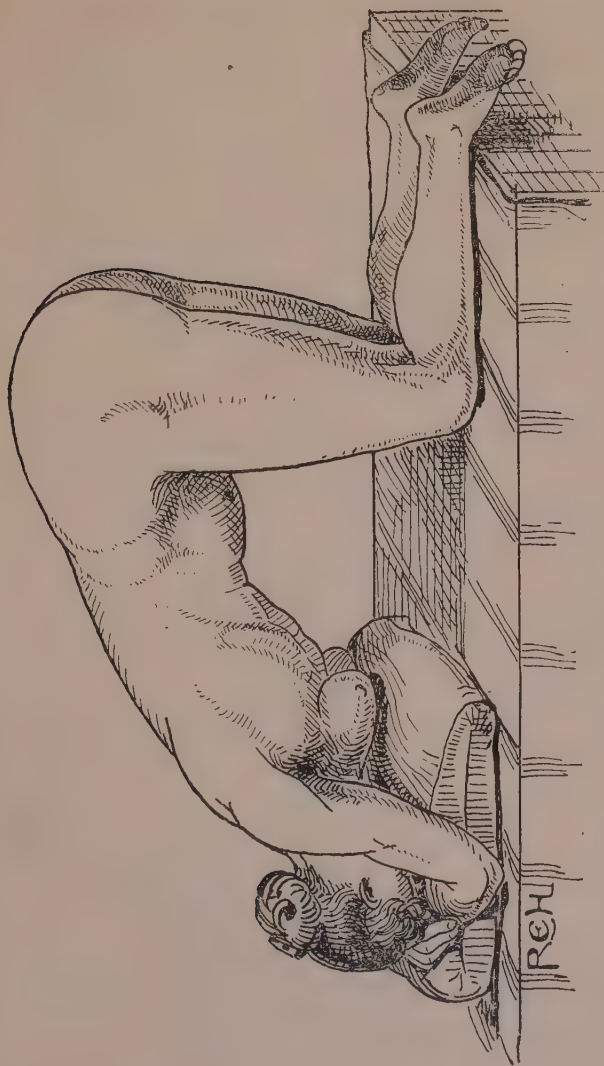


FIG. 9.—THE GENUPECTORAL POSITION.

out behind her and hanging over the side of the bed. The knees are drawn up, but the right knee is drawn up higher than the left, and in front of it. The result is that the vulva is more fully exposed than it is in the lateral position, and consequently instrumental manipulation is easier. The late Dr. Marion Sims devised this position mainly to facilitate the introduction and use of the speculum that bears his name. The arrangement of the bedclothes and the night-dress is the same as in the lateral position.

4. **The Genupectoral Position** (Fig. 9).—This position is very rarely required, but it is useful in certain cases. As its name implies, the patient rests on her knees and chest; the latter is supported on a pillow, and the thighs are held quite vertical.

5. **The Gynæcological Position** (Fig. 10).—In order that this position may be adopted, a special examining couch or chair is usually required, and consequently its use is restricted to the consulting-room and the out-patient department. The couch or chair has rests to support the patient's feet, and the patient lies on her back, with the buttocks brought to the edge of the couch. The patient's head can be raised on pillows into any position that is comfortable for her. The examiner stands opposite the vulva, between the patient's legs. This position is the best in which to make a bimanual examination, because the organs are lying in their normal relations, differing in this respect from what is the case in the lateral or Sims's posture; further, the examiner's hands are

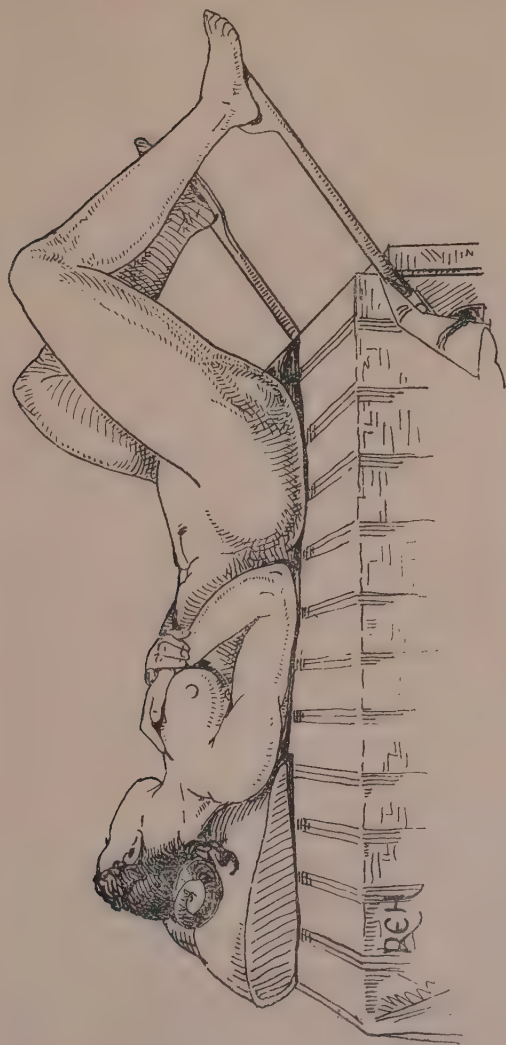


FIG. 10.—THE GYNÆCOLOGICAL POSITION.

free to explore the abdomen, inspection of the vulva can be done if necessary, and instrumental manipulations are easily carried out.

For an examination in this position, it is an advantage to have the patient undressed and clothed in a dressing-gown; but it is quite possible for the examination to be made when the patient is in her ordinary clothes, as long as she has not closed drawers or knickerbockers on, and provided also that the corsets are removed if an abdominal examination is to be made.

While, as I have said, a special couch or chair is usually required for this position, an approximation to the position can be obtained by placing the patient across the bed, with the buttocks brought to the edge and the feet resting on a couple of chairs.

6. The Lithotomy Position.—This is an exaggeration of the gynæcological position; it is only used when the patient is under anæsthesia, and consequently it will be considered more fully when speaking of operations.

Preparation of the Patient.

Attention to the Bowels.—When the lower bowel is loaded an examination is more difficult; indeed, sometimes the object of the examination, which is to find out what is wrong with the patient, is defeated, because it may be impossible to determine whether a particular swelling is due to a tumour or to impacted fæcal matter. Consequently, when there is

sufficient notice given of the intention to make an examination, the nurse should see that the patient is given an aperient, and, if necessary, an enema should be administered. Sometimes for want of this precaution an examination has been begun, and has had to be postponed to another day.

Attention to the Bladder.—A patient should always empty the bladder before undergoing an examination, because a full bladder interferes with the correct interpretation of the condition of the pelvic organs. It has not infrequently happened that an overfull bladder has been mistaken for an ovarian cyst. It is usually sufficient if the patient empties the bladder naturally; only in exceptional circumstances is it necessary to pass a catheter before a simple examination.

Attention to the Dress.—The nurse should always see that the patient's clothes are suitable for an examination; particularly she should insure that the patient does not present herself to the physician wearing corsets, closed-up drawers or knickerbockers, combinations that do not unbutton all the way down, or a diaper or sanitary towel. When the patient is in bed, wearing a nightdress, the matter is, of course, simple; if she is in a consulting-room, she may usually retain her underclothing (with the above qualifications), petticoats, and even blouse and skirt; but all fastenings round the waist, such as drawers, petticoats, and skirt, must be undone. A gown that fastens down the back must, of course, be removed.

Attention to the Patient's Person.—Sometimes a doctor has to examine a patient who is suffering from hæmorrhage or copious discharge, and in such a case the nurse should see that the clothing, bed-clothes, and the vulva, are clean; and if necessary she should sponge the vulva. A douche should not be given unless ordered.

Menstruation.—It is only in very exceptional circumstances that an examination can or should be made during menstruation; and the nurse should therefore make sure that the patient is all right in this respect. In a nervous person, the dread or thought of the examination may cause menstruation to come on some days before it is due. When a patient is suffering from hæmorrhage due to causes other than menstruation, examination is not only permissible, but sometimes urgently necessary. In cases of doubt, the nurse should refer to the doctor to know whether the examination is to be proceeded with.

Preparation of Instruments and Accessories.

The amount of preparation devolving on the nurse differs in private and in hospital work. In private cases the doctor will bring his own instruments, but in hospital the nurse provides what is necessary.

1. **In Private Cases.**—The nurse will see that there is a sufficiency of hot water, several clean towels, soap, and a nail-brush. In a convenient position should be placed a small table covered with

a clean towel, and on the table a tray or dish containing vaseline and several small swabs of cotton-wool. An empty tray can be placed beside it to receive the doctor's instruments.

At the conclusion of the examination the nurse offers the doctor a piece of cotton-wool or a small towel (known in hospital language as a "surgical"), to remove the vaseline from his fingers before washing; she then makes the patient comfortable, after which she washes and dries the instruments.

2. In Hospital Work.—In the out-patient department washing arrangements are provided; in the ward the nurse will see that hot water, soap, nail-brush, and towels, are ready, and a bowl of antiseptic lotion should be placed on the washstand.

To meet the views of different doctors, some variety of lubricants is permissible, such as vaseline, glycerine perchloride (1 in 1,000), soft soap, or sanitas cream. A small piece of ordinary curd soap is useful to protect the finger-nail when making a rectal examination. A pair of sterilized rubber gloves should be available in case a septic or dirty case has to be examined.

In addition to cotton-wool swabs, the following instruments for examination should be got ready:

Uterine sound, Fig. 11.

A set of Fergusson's specula (Fig. 12). These specula are made of different materials, namely, metal, celluloid, and silvered glass. Glass is useful, because it is not acted upon by caustics, but it has the drawback of breaking easily.

Celluloid specula do not give such a good illumination, but they can be used for caustics; metal specula are just the reverse; I therefore like to have a set of each of the last two kinds, the metal for examination, and the celluloid for treatment.



FIG. 11.—THE UTERINE SOUND.



FIG. 12.—FERGUSSON'S SPECULUM.

A Sims's speculum (Fig. 13).

A Neugebauer's speculum (Fig. 14).

A uterine dressing forceps (Fig. 15).

Swab-holders (Fig. 16).

Bladder sound (Fig. 17).

Glass and rubber catheters.

In out-patient work, where a certain amount of treatment is carried out, some further instruments and accessories will be required; these will be dealt with in the chapter on minor treatment.

The nurse should never hand the doctor a cold



FIG. 13.—SIMS'S SPECULUM.

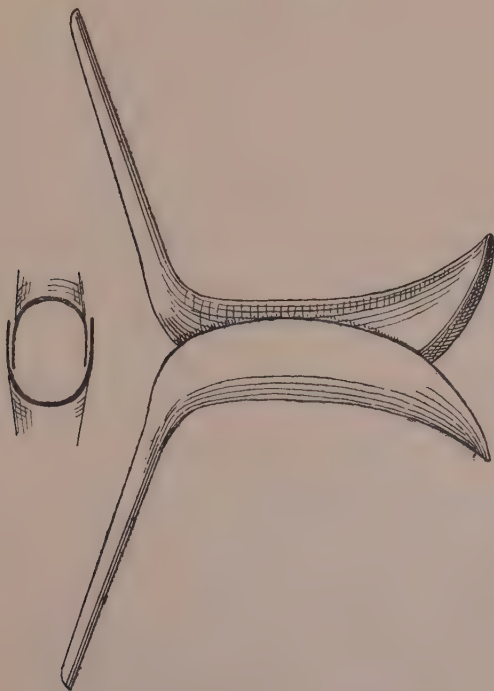


FIG. 14.—NEUGEBAUER'S SPECULUM.

instrument; she should have a bowl of hot water, lysol, or sanitas, in which to dip the instruments before use. Mercurial lotions must, of course, be avoided for instruments. Carbolic lotion does not harm the instrument, but it is irritating to the skin;

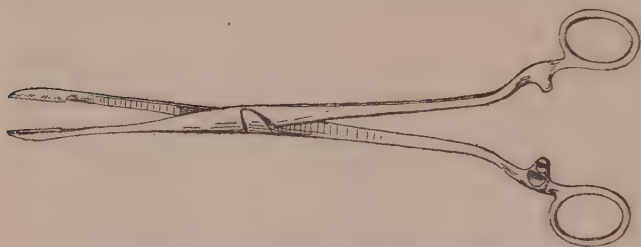


FIG. 15.—UTERINE DRESSING FORCEPS.

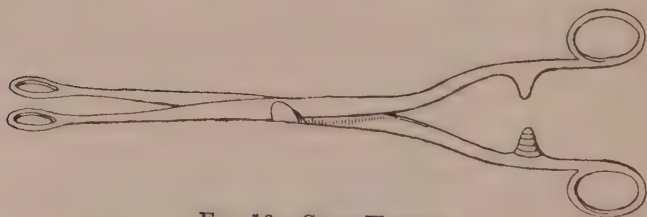


FIG. 16.—SWAB-HOLDER.



FIG. 17.—BLADDER SOUND.

and therefore if the instruments have been lying in carbolic lotion they should be rinsed in plain hot water before use.

The ideal plan is that the instruments should be sterilized by boiling every time before they are used;

in the out-patient department this is not always practicable, and in that case they must be washed in an antiseptic lotion whenever they have been used.

For the doctor's hands the nurse should provide biniodide of mercury lotion, 1 in 2,000; and lysol, 1 drachm to the pint, or crude sanitas, 1 ounce to the pint.

Examination under Anæsthesia.

An examination under anæsthesia is called for in some cases—for example, in the case of girls and unmarried women, and patients who are very nervous. Sometimes, also, the condition is a complex one, and cannot be cleared up by an ordinary examination; anæsthesia allows of complete muscular relaxation, and also permits of the doctor exercising deeper pressure than would be possible in the case of a conscious patient.

The preparations for an examination under anæsthesia are exactly the same as those for vaginal operations, and will be considered in the chapter dealing with that subject.

CHAPTER V

MINOR TREATMENT

MANY gynæcological conditions are treated by local measures without having recourse to operation ; and such local measures can be grouped together conveniently under the heading of Minor Treatment. In some cases the carrying out of such treatment is entrusted to the nurse, and in other cases, particularly in hospital work, the nurse gets ready what is required.

The Vaginal Douche.—This is very often required, as it is used not only in carrying out treatment, but also in preparing for operations. There is a wrong way as well as a right way of giving a douche. The wrong way is often used by patients themselves ; they sit up on some vessel or receptacle, and pump water or lotion into the vagina by means of a Higginson's syringe. The result is that, usually, the lotion does not get to the deeper parts of the vagina at all. Moreover, the temperature and strength of the lotion may be guessed at in a haphazard manner.

The right way is this : The patient lies flat on her back over a bedpan. The lotion, of a proper strength

and of a proper temperature, is contained in a suitable can placed at a height above her; it is delivered by a long tube, on the end of which is a proper nozzle. An ordinary douche-can is shown in Fig. 18. It

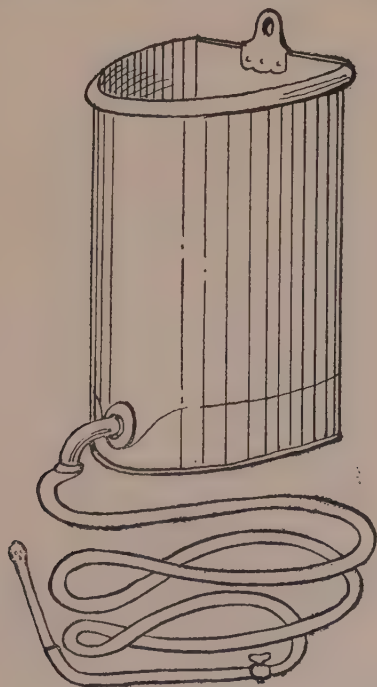


FIG. 18.—DOUCHE-CAN.

contains 3 to 4 pints. Some more elaborate forms have a thermometer set in the side. A portable arrangement is often convenient; for example, the receiver may be a collapsible rubber bag. The Rotunda douche shown in Fig. 19 is a simple and

useful apparatus. On one end of the tube is a plunger which rests on the bottom of a jug ; a quart or three-pint jug can be obtained in any house. To prevent the tube from kinking as it passes over the edge of the jug, it is supported by a semicircular vulcanite

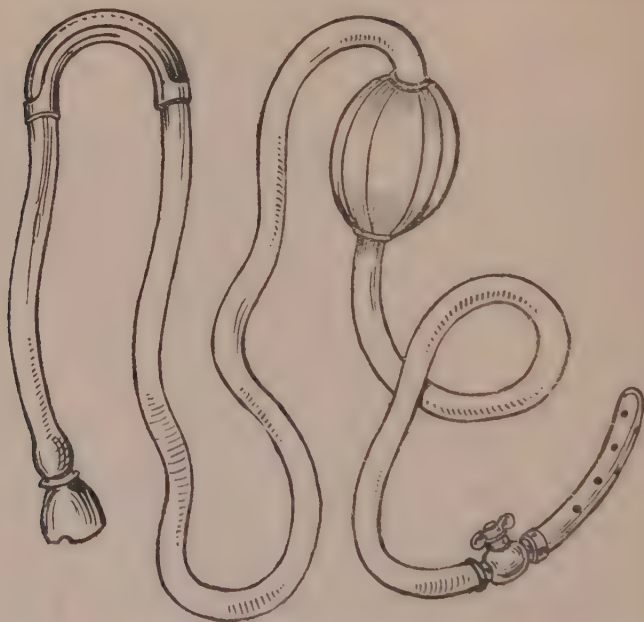


FIG. 19.—ROTUNDA DOUCHE.

tube, which can be moved along the rubber tube so that it comes in the right place. At the other end of the tube a nozzle is attached, the flow through which can be regulated by a tap. Somewhere along the course of the tube is a bulb, which is used to

start the flow; and once it has started, it goes on by syphon action until the jug is empty.

The nurse gives a douche in the following manner: First she sees that the nozzle is sterilized—by boiling, if made of glass, and by immersion in antiseptic, if made of vulcanite. It lies ready to her hand in a bowl of sterilized water. She then mixes the lotion at the prescribed temperature and of the prescribed strength, and hangs up or stands the douche-can in a suitable place. A mackintosh or draw-sheet is placed under the patient, and the patient's hips are raised on a bedpan which has been warmed. The nurse makes sure that the aperture in the bedpan is so placed that the lotion will run into it. The bed-clothes are turned down to the patient's knees, and a blanket is placed over her body; the lower edge of the blanket is protected by a towel carried round under it, and comes just below the pubes. The nurse now washes her hands, and then proceeds to cleanse the vulva and vaginal orifice by swabbing with cotton-wool dipped in a weak warm antiseptic lotion. The nozzle is attached to the tube, and a little lotion is allowed to run through. The nurse then separates the labia gently with the fingers of the left hand, and introduces the nozzle gently into the vagina for a distance of 3 to 4 inches. While doing this she is to remember the direction of the vagina, which does not run straight up towards the patient's head, but passes upwards and backwards towards the small of the back. The lotion is then allowed to flow through

the tube until the can is empty. The tap is turned off, the nozzle withdrawn, and then the nurse should see that no lotion remains pent up in the vagina ; otherwise it will gradually run away when the patient is settled on her clean sheet, and wet her, making her very uncomfortable. To obviate this accident, the perineum may be gently depressed to allow the lotion to run out, and the patient may be either turned on her side or allowed to sit up, according to her condition. Finally the bedpan and mackintosh are removed, and the patient is made comfortable. If there is any doubt about the lotion having all come away, it is advisable to leave the mackintosh or draw-sheet in position for a little time.

The temperature of an ordinary douche is about 105° F. ; if a hot douche is ordered, it should be given at 115° to 120° ; the latter is as hot as most patients can bear it. When the purpose of the douche is merely for cleansing, plain hot water is often used. The lotions most frequently employed, with the purposes for which they are used, may be enumerated as follows :

Astringent Douches :

Alum, 1 drachm to the pint.

Sulphate of zinc, 1 drachm to the pint.

Sulphocarbolate of zinc, 1 drachm to the pint.

Decoction of oak bark, $\frac{1}{2}$ ounce to the pint.

Mild Antiseptic Douches :

Condy's fluid, mixed to a port-wine colour.

Boracic acid, 1 drachm to the pint.

Antiseptic Douches :

Tincture of iodine, 1 drachm to the pint.

Binioidide or perchloride of mercury, 1 in 10,000 to 1 in 2,000.

Carbolic acid, 1 in 80 to 1 in 60.

Sanitas sypol, $\frac{1}{2}$ to 1 drachm to the pint.

Lysol, $\frac{1}{2}$ to 1 drachm to the pint.

Deodorant and Antiseptic :

Crude sanitas, $\frac{1}{2}$ ounce to the pint.

A very hot douche is often a useful method of checking excessive uterine hæmorrhage.

Tampons.—A tampon is a plug of cotton-wool tied round with a piece of thread to facilitate removal. *Dry tampons* are sometimes used, either to plug the vagina in cases of hæmorrhage; or to absorb vaginal discharge, so that it may not cause irritation to the vulva; or to support the walls of the vagina in cases of prolapse, when there is too much ulceration to allow of a pessary being worn. There is one other purpose of a dry tampon that is perhaps worth mentioning. Towards the close of menstruation, when the flow is getting scanty, a dry tampon is a useful substitute for a diaper or sanitary towel, particularly in the case of patients who lose a great deal, and are consequently liable to suffer from chafing of the vulva and thighs. Plugging for hæmorrhage is always done by a doctor, and the introduction of a simple dry plug is easily carried out by the patient herself.

Medicated tampons are used chiefly in cases of pelvic inflammation and congestion. Generally speak-

ing, the method of using them is that a douche is given in the evening; then the tampon, soaked in the prescribed preparation, is passed well up into the vagina, and left there for the night. In the morning the tampon is withdrawn, and another douche is given. The treatment is carried out every night, or every second or third night, according to the nature of the case. After the introduction of a medicated tampon the patient should wear a diaper or a pad of wool, because the effect of the medication is to cause a free, watery discharge from the uterus and vagina. The simplest medication is glycerine; this is used because it has the property of attracting water to itself, and so of withdrawing fluid from the tissues. The tampon should be soaked in glycerine for some hours before use.

Frequently the glycerine is mixed with ichthyol, in the proportion of 5 or 10 parts of ichthyol to 95 or 90 parts of glycerine. If ichthyol be used too strong, it acts as a caustic, and makes the vagina very sore. The discharge when an ichthyol tampon has been used is dark and stains the linen; patients should be warned of this fact. The introduction of an ordinary ichthyol tampon is rather a "messy job," but there is a clean and convenient way of carrying out the treatment by using what are known as "Pond's tampons."

Here the medication is contained in a conical gelatine cap, and the broad end of the cone is plugged with dry cotton-wool, which helps to absorb the discharge. The conical point facilitates introduction,

and when the gelatine is slightly moistened with water it slips in easily. When it has been introduced the warmth of the body melts the gelatine, and the medication can get to work. Occasionally other medications, such as antiseptics and sedatives, are introduced in this manner.

I may here say a word about **Medicated Pessaries** or **Suppositories**. The latter is the better word to use, because the former is apt to be confused with the mechanical appliances of the same name, used in the treatment of displacements. A vaginal suppository is made conical in shape like a rectal suppository, but it is a good deal larger. It consists chiefly of cacao butter, which melts at the body temperature, mixed with some sedative or antiseptic application. It is necessary for the patient to wear a diaper or a pad of wool when these things are used, because the resulting discharge is mixed with the cacao butter, which makes a waxy deposit as it cools.

The Use of the Catheter.—A few words about this simple but important procedure will not be out of place. As a rule a glass catheter is best, because it is easily boiled and kept clean. Sometimes, however, the use of a glass catheter is attended with danger, as in cases where the pelvis is blocked up by a hard tumour such as a fibroid; because the tumour may distort the normal direction of the urethra, and as the result of the difficult manipulation the catheter may break in the urethra or in the bladder. For such cases, therefore, a metal, rubber, or gum-elastic catheter is better. Asepsis is of the utmost impor-

tance in the use of the catheter ; otherwise a troublesome or dangerous cystitis may set up. The occurrence of cystitis from the use of the catheter is a great reproach to the nurse.

Years ago the directions given for passing a catheter were such that only by accident could the patient escape infection. The faulty thing was that the catheter was directed to be passed by touch alone, so as not to expose the patient. Directions of this kind will be found in standard books on gynæcology of twenty-five years ago. The present age is more rational. It is recognized that exposure can be done in such a delicate way as not to jar on the patient's susceptibilities.

The proper way to pass a catheter is as follows : The patient lies on her back, with the knees drawn up and separated. The bedclothes are turned down to the knees, and a blanket covers the upper part of the patient. The catheter, previously boiled, lies in a receiver containing sterilized water, and a bowl to take the urine lies near the perineum. The nurse sponges the vulva and urethral orifice with warm antiseptic lotion, such as biniodide of mercury, 1 in 4,000. A small swab of cotton-wool, lightly wrung out of the lotion, is left lying against the urethral orifice while the nurse washes and disinfects her hands. She then gently separates the labia with the fingers of the left hand, removes the swab, and, taking the catheter in the right hand, passes it directly into the urethra. The light must be good enough for her to be able to do this without difficulty

She must remember the direction of the urethra, which passes upwards and backwards parallel with the vagina. Once the catheter is in the bladder, its point is turned a little forward. It must not be passed too far in; otherwise its eye will impinge on the bladder wall, and the urine will not flow.

The nurse should see that the bowl is in a proper position to receive the urine. When the bladder appears to be empty, the catheter should be gently withdrawn a little, because there may still be urine in the bladder, but the bladder wall may have fallen on the eye of the catheter in the course of the emptying. Having made sure that the bladder is empty, the nurse should place her forefinger on the end of the catheter while she withdraws it, so as to prevent the urine that remains in it from dribbling on the vulva.

In cases where there is some wound of the vulva, such as a perineorrhaphy, it is particularly important to avoid soiling with urine; and to make quite sure, it is a good plan to place a small piece of cotton-wool just under the urethral orifice while withdrawing the catheter. But as even this precaution may not save the wound from contamination, the vulva may be gently irrigated with a little weak antiseptic. All that now remains is to remove the bedpan and mackintosh, and see that the patient is left quite dry and comfortable. If the vulva is allowed to remain wet, chafing and soreness will be the result.

Sometimes the urethral orifice is sore and sensitive, so that the patient experiences great pain from the

introduction of the catheter, and looks forward to the performance with dread. A few drops of a 10 per cent. solution of cocaine applied to the meatus upon a small piece of cotton-wool will usually render the passage of the catheter painless, and thus save the patient a good deal of distress.

The proceedings just described are usually carried out by the nurse herself, with the patient in bed. Other measures that come under the heading of Minor Treatment are carried out in the consulting-room or out-patient department by a medical man, and the nurse's duty in connection with such treatment will consist in making the necessary preparations.

Minor Treatment in the Out-Patient Department.

Many of the instruments and accessories that the nurse will require to get ready are the same as those already enumerated in describing the preparations for examination ; but to make the list complete they will be mentioned again here :

Instruments :

Uterine sound.

Fergusson's specula.

Neugebauer's speculum.

Sims's speculum.

Uterine dressing forceps.

Bladder sound and catheters.

Swab-holders. These should be ready fitted with a small swab of cotton-wool.

Uterine or Playfair's probes (Fig. 20).

Scarifier (Fig. 21).

Lubricants :

Vaseline.

Glycerine perchloride.

Soft soap, hard soap.

Sanitas cream.

Lotions :

Biniiodide of mercury, 1 in 2,000.

Sanitas sypol, 1 drachm to the pint.

Lysol, 1 in 200.



FIG. 20.—PLAYFAIR'S PROBES.



FIG. 21.—SCARIFIER.

Accessories :

Cotton-wool tampons.

Cotton-wool swabs.

Pure phenol (carbolic acid).

Iodized phenol.

Liniment of iodine.

Other caustics and dressings may be required according to the practice of individual doctors.

For example: Nitrate of silver copper sulphate, tincture of iodine, and creosote mixture (equal parts of creosote, absolute alcohol, and glycerine).

Rubber gloves.

Pessaries.

Treatment of Vaginitis.—Sometimes cases of vaginitis are treated by swabbing out the vagina and cervix through a speculum. Such lotions may be used as carbolic acid, 1 in 20; biniodide of mercury, 1 in 4,000; silver nitrate, 4 grains to the ounce. The swabbing is generally followed by the insertion of a dry tampon.

Treatment of Erosion of the Cervix.—In some cases the first step is to scarify the cervix through a Fergusson's speculum. Numerous little stabs are made with the scarifier, so as to open up the small retention cysts; a droplet of clear mucus is seen to exude from each such cyst. Then, or in the first place, the cervix is swabbed over with one of the caustics enumerated, applied by means of a little cotton-wool wrapped round the end of a Playfair's probe. After the application a tampon is inserted.

Treatment of Cervical Endometritis.—This may be carried out in the out-patient department by dipping a Playfair's probe, wrapped round with cotton-wool, in some antiseptic or caustic, and passing the probe right up into the uterine cavity. For this purpose the probe must be dressed—that is, wrapped round with cotton-wool—very carefully and firmly; otherwise the wool may be left behind in the uterus. The proper way to dress the probe is to take a very thin sheet of good cotton-wool, moisten the probe with water, then wrap the sheet very smoothly and firmly round the probe, covering at least 3 inches of it. The nurse should test it, when she has finished,

to see whether the wool is tight or whether she can pull it easily off the probe. In the latter case, it has been done wrong, and a fresh piece of wool must be used.

Treatment of Displacements. — Backward displacements of the uterus are treated as follows: The uterus is first brought up into its proper position, either by manipulation with the fingers or by the



FIG. 22.—HODGE PESSARY.

use of the uterine sound, according to the nature of the case. Naturally, when pregnancy is present or suspected the sound cannot be used. Sometimes during the manipulations the patient is placed in the knee-elbow position, with the idea that the reposition of the uterus is thereby facilitated; but this very uncomfortable position is never necessary for this purpose, and no doctor with any experience of these

cases would employ it. When the uterus is held back by adhesions, it cannot be replaced by any manœuvre, and when it is free it can generally be replaced by the fingers, and always with the sound. When the uterus is in position some form of *Hodge pessary* (Fig. 22) is inserted. These pessaries are made of vulcanite, rubber, or block tin. They are made in slightly different forms, and sometimes the doctor may mould a pessary to suit an individual case. Block-tin pessaries have the advantage that



FIG. 23.—RUBBER RING PESSARY.

they are easily moulded without the use of heat; vulcanite pessaries can be moulded by placing them in boiling water.

Prolapse of the uterus, cystocele, and rectocele, are treated by the insertion of a ring pessary (Fig. 23). These pessaries are made of india-rubber, with slight modifications. Some doctors like a thick ring, others prefer a thin one; some use a ring of solid rubber, others choose a ring with a metal or "watch-spring" centre, or a hollow rubber ring filled with glycerine.

Hundreds of different-shaped pessaries have been invented, with misguided ingenuity; not more than about half a dozen types are practical, and many have long since ceased to be regarded as anything but curiosities suitable for museums. For prolapse, various complicated arrangements are still used at times, such as vaginal cup and stem pessaries, with tapes that pass under the perineum, and an expanding hinge apparatus known as "Zwancke's pessary."

The simplest pessaries have the drawback of causing irritation and setting up discharge, and the tendency is increased with complicated instruments; further, patients sometimes neglect to have their pessaries seen to, and even forget all about them for years, and when they are driven to seek advice, by a stinking discharge, the pessary may be found practically lying in a pool of pus. This is a horrible and revolting state of things, and consequently a pessary may be described as a necessary evil—that is, sometimes necessary, but always evil. A patient who is unfortunate enough to have to wear a pessary should douche herself regularly to keep the parts as clean as possible, and should report herself at regular intervals to her doctor to have it seen to. When a patient comes up for this purpose, the pessary is removed and placed in a bowl of lotion; if it is in good condition, it is cleaned, and can be used again; if it is roughened or if the rubber has perished, it must be destroyed, and a new one inserted. Before the pessary is replaced, the doctor ascertains whether

there is any vaginitis or ulceration, and in such a case the pessary is omitted for a week or longer, to give the parts the opportunity of regaining their normal condition. If everything is all right, the nurse hands the doctor the clean pessary or a new one, as the case may be, and he places it in position.

CHAPTER VI

ANTISEPSIS AND ASEPSIS

Two discoveries in the last century transformed the whole realm of surgery: the first was anæsthesia, and the second was antiseptis. It is very difficult for dwellers in our latitudes, with the regular alternation of day and night, to imagine what life is like during the Polar winter, with its months of unbroken night; and it is equally difficult for our generation to imagine what surgery was like in the dark days before anæsthesia and antiseptis. For in our time surgery is merciful, safe, and widespread, saving thousands of lives every year; in the dark days it was cruel in its action, though kind in its intent; it was dangerous and restricted, and the thought of an operation might well make the bravest flinch.

We need not dwell on anæsthesia, as the nurse has little to do with it; but as regards antiseptis the surgeon absolutely depends on the co-operation of the nurse. In the preparation for an operation, during operation, and in the after-treatment, antiseptis is the first and last necessity for safe and successful surgery. It is well, therefore, that we should devote a little time to the consideration of—

Sepsis, Antisepsis, and Asepsis.

At first it was not understood that, when a wound went wrong after an operation, and the patient developed "surgical fever," the condition was a *contagious* one, and might be communicated from one patient to another, the infection being carried by the surgeons and nurses. Similarly, puerperal fever, which is virtually a surgical fever, was not understood to be infectious or contagious.

One of the earliest to prove the contagious character of puerperal fever was Dr. Alexander Gordon, of Aberdeen, in 1795. Unfortunately, his voice was "the voice of one crying in the wilderness," and few believed him. It would take too much time to name all those who from time to time tried to convince an unbelieving medical world of the truth of this contagion, but two names deserve special mention: those of Oliver Wendell Holmes, who wrote a valuable essay on the subject in 1843; and a Hungarian physician, Semmelweis, who began working at the subject in 1846. The results of those observations were first published by Hebra in 1847-48. What was true of puerperal fever was afterwards proved to be true of surgical fever—that is, what we now speak of as "blood-poisoning," or "septicæmia." The next important discovery was that of Pasteur, who showed that minute germs were the cause of suppuration; and the crowning point of all this work was the discovery and teaching of our own revered and beloved Lister:

that these germs could be destroyed by various means.

Sepsis is the name given to a condition in which the germs of suppuration are present and active.

Antisepsis is the principle of the destruction of germs, so that they are rendered powerless for evil.

Asepsis is the condition in which the germs are absent, and any object that has been rendered aseptic is said to have been "sterilized."

When Lister first began his researches, germs were destroyed by chemical means—in other words, by poisons. The one principally used was carbolic acid. This was the era of antisepsis. But after a time it was found that the use of instruments and dressings soaked in carbolic acid or other strong antiseptics had a harmful effect on the tissues, and it was discovered that sterilization could be carried out even better by means of heat. Instruments and dressings so sterilized were said to have been rendered aseptic, and of course, they can have no harmful effect on the tissues. Thus was introduced the era of asepsis.

It must, however, be remembered that heat is an antiseptic, like the chemicals we have spoken of, and that asepsis is obtained by means of antiseptics. Still, as ordinarily understood, the term "antiseptics" nearly always means chemical antiseptics; and the difference is this, that when chemical antiseptics are used the germs are destroyed, but the chemical remains; whilst with asepsis obtained by

heat there is nothing harmful left after the germs are destroyed.

The tendency, therefore, is to sterilize by heat—that is, by boiling, by steam, or by hot air—whatever can be treated in this way, and chemical antiseptics are reserved for things that cannot be sterilized by heat, especially the human skin.

The fundamental idea for the nurse to have firmly fixed in her mind is that nothing that has not been sterilized must come near a wound, and that nothing that has been sterilized must be allowed to touch anything that has not been sterilized. For example, when the hands have been sterilized preparatory to an operation, the nurse must not open a door with her hand, or touch the patient, or use her handkerchief, or adjust her hair, or handle any bowls or other implements that have not been sterilized; or if she has to do any of these things, or does them accidentally, she must sterilize her hands again before touching the field of operation or anything that has been sterilized. Similarly, if a nurse has to hand a sterilized instrument or a dressing to the surgeon, and has not previously prepared her hands, she should pick up the instrument or the dressing with sterilized forceps.

It is not possible to be too particular or too scrupulous in these matters, for to the patient it is a question of life and death.

To the nurse who begins her training at the present time, a great deal of the preparations for operations

appears as a matter of routine, but it is well, all the same, that she should understand why such minute precautions are taken, and realize the significance of everything that is done. It will help to make things plain if we pass in review all that is involved in an operation, and consider how asepsis is constantly being aimed at and attained.

1. The Operating-Room.—It is well known that the germs of infection lurk in dust and dirt, and consequently the modern operating theatre is planned in such a way as to reduce the possibilities of dust to their lowest degree. Thus the walls and floor are covered with some material having a smooth, polished surface; all angles are rounded off and all ledges are avoided; and the room is arranged in such a way that it can be sprayed all over with a hose.

In a private house this degree of perfection cannot be obtained, but if two or three days can be given to the preparation of the operating-room, the curtains and pictures can be taken down, unnecessary furniture removed, the carpet taken up, the floor washed, and the walls and window-ledges wiped over with a damp cloth. A linoleum floor is very good for an operating-room; failing this, a large piece of clean drugget can be tacked down. If there is only a short time for preparation, it is best to disturb the room as little as possible; it is much better to have dust lying on ledges than flying about the room, and so curtains and carpets should be left, the latter being covered with sheets of brown paper, over which, again, is

spread the drugget or a clean dust-sheet. Let sleeping germs lie, unless there is plenty of time to get them right away.

2. Operating-Room Furniture.—In the theatre of a hospital all the furniture is made of metal and glass, because it is found that germs do not collect on a brightly polished surface, and, moreover, polished metal and glass can easily be washed and kept clean.

In a private house we do the best we can by having plain wood tables, preferably such as can be washed over ; and they are covered over with clean towels.

3. Trays, Dishes, and Bowls, to hold instruments, dressings, and lotions, should be made of enamelled iron, and should be rendered aseptic by boiling them in a copper or in a large clean fish-kettle. When we have to use china, earthenware, or glass utensils that cannot be boiled, they should be washed with some antiseptic, such as methylated spirit or carbolic lotion (1 in 20), and rinsed in plain sterilized water—that is, water that has been boiled.

4. Water.—It is obvious that a great quantity of water is required during an operation, and it must be sterilized. In hospital work the theatre is provided with an apparatus for supplying large quantities, not only of boiling water, but also of water that has been boiled and allowed to cool down. Boiling water can, of course, be obtained on short notice wherever there is a fire and a kettle, but cold boiled water requires preparation ; and so in a private house the

nurse should boil large quantities of water and set it aside to cool in jugs that have been sterilized, and the top of the jug should be tied over with clean muslin to avoid contamination from the air. Filtered air is sterile.

5. **Dressings, Bandages, Swabs, and Overalls,** are prepared by being placed in a steam sterilizer; they are packed up in special drums or tins, and as they cool they are dried by some special device. For

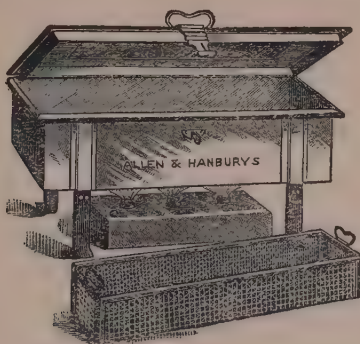


FIG. 24.—INSTRUMENT STERILIZER.

emergency operations in private houses, when a proper steam sterilizer is not available, towels and swabs can be boiled in a clean saucepan, and then wrung out; whilst for dressings there are generally available packets of ready sterilized wool and gauze sealed up in cardboard or tin packages.

6. **Instruments.**—These are rendered aseptic by boiling in a sterilizer such as the one shown in Fig. 24. In an emergency a clean fish-kettle can be used.

Cutting instruments—that is, scalpels and scissors—are spoiled by boiling, and therefore they are best prepared by placing them in a dish containing pure methylated spirit. The materials generally used for ligatures and sutures are silk, linen thread, silkworm-gut and catgut. The first three can be boiled; catgut cannot be boiled, and requires special preparation. The simplest way to prepare it is to soak it for some days in a solution of iodine in rectified spirit (see later).

7. The Patient.—Naturally, the patient cannot be boiled; but she is rendered as clean as possible by a warm bath overnight, if her condition allows of it, and by thorough washing in bed if she cannot stand a bath. The field of operation is prepared by antiseptics; several systems are in vogue. One way is to wash the abdomen (supposing an abdominal operation is contemplated) with soap and water after shaving the pubes and vulva; it is next washed with ether or terebene, to remove the fatty matter from the surface of the skin, then with some antiseptic, such as biniodide of mercury (1 in 2,000). It is then covered with a piece of lint, either sterilized or wrung out of the biniodide solution; over this is placed a piece of jaconet or rubber tissue, and the whole is kept in place with a many-tailed bandage. Another way is this: After washing the abdomen, a piece of sterilized wool or lint is placed over the site of the wound; on the following morning the abdomen is painted with tincture of iodine and covered with a

piece of lint, whilst just before beginning the operation a further painting with iodine is carried out. The value of the iodine is that it soaks a little way into the skin ; but in order that it may act in this way the skin must be dry. When the skin is wet, the epithelium swells and prevents the iodine getting in. Consequently it is no use applying iodine just after the skin has been washed.

8. The Operator, Assistants, and Nurses.—With regard to these, we have to consider their hands and their clothing.

The hands must be carefully prepared. Nails should be kept trimmed short, and the hands and arms are first scrubbed thoroughly with a nail-brush. It is hardly necessary to say that all rings must be removed to begin with ; in the case of married people, even the otherwise irremovable wedding-ring must come off, sentiment being sacrificed in the good of the cause. After thorough washing, the hands are soaked in some antiseptic, of which the best is first a solution of biniodide of mercury in methylated or rectified spirit (1 in 1,000), and then a solution of biniodide of mercury in water (1 in 2,000). Carbolic lotion and perchloride of mercury are very irritating to the hands of most people, making them rough ; and it is of the greatest importance that hands that are to be used for surgery should be smooth. Further, rubber gloves are now generally used ; they are boiled for five minutes and then placed in sterilized water, and they can be put on most easily if filled with

water. The use of gloves does not in any way diminish the necessity for the preliminary antiseptic preparation of the hands.

The clothing of the operator and assistants consists of a sterilized overall and a cap or veil for the head. In addition, it is the custom in some hospitals for the surgeons to put on rubber boots, in order that they may not bring in to the floor of the theatre the dirt of the streets.

The clothing of the nurse is a sterilized overall over her print dress ; the sleeves are rolled up above the elbows, and a cap is worn of such a kind as to cover the whole of the hair and " keep the wayward locks in place."

CHAPTER VII

PREPARATION FOR OPERATION

HAVING reviewed the methods by which asepsis is secured for everything and everybody connected with an operation, we can now proceed to consider the nurse's duties in preparing for an operation. The subject may be dealt with conveniently under the following headings:

1. Preparation of the room.
2. Preparation of accessories.
3. Preparation of swabs and dressings.
4. Preparation of instruments.
5. Preparation of the patient.

1. Preparation of the Room.

In hospital work the nurse will see that the theatre is thoroughly clean and well warmed. A temperature of 70° F. should be aimed at. A higher temperature than this does no harm to the patient, but it is apt to be rather trying to the operator.

In a private house there is a great deal more to arrange.

Light.—If possible, a room should be selected with

a large central window, in preference to two windows with a space of wall between them. The loftier the window, the better. Heavy curtains should be removed if they obstruct the light; and if the room is overlooked by opposite houses or can be seen into from the garden or the street, a short muslin curtain can be fastened over the lower half of the window, leaving the upper half clear. Another plan is to whitewash the lower half of the window.

Provision should be made for a good artificial light in case of need. One or two powerful overhead electric lights and an electric hand-lamp with long cord attachment will answer best. An incandescent gas-burner also gives a good light; but generally speaking electric light is much better than gas for operating, because when gas is burning in a room, either in the form of lights or in the form of a stove, the vapours of ether and chloroform are apt to become decomposed, forming pungent and irritating gases. Failing electric light and gas, the best arrangement that the house allows of should be secured. A standard oil-lamp and one or two oil hand-lamps may answer the purpose; and in emergencies, in cottages, successful operations have been performed by the light of candles, and even the humble "farthing dip." If possible, the room should be large and airy, giving plenty of space to move about.

Furniture.—Such furniture as is not required should be removed into another room or ranged along the walls, according to its portability and bulk,



FIG. 25.—EXTemporized TRENDELENBURG POSITION.

the object being to obtain a clear space in the middle of the room to accommodate the necessary furniture. The following things are required :

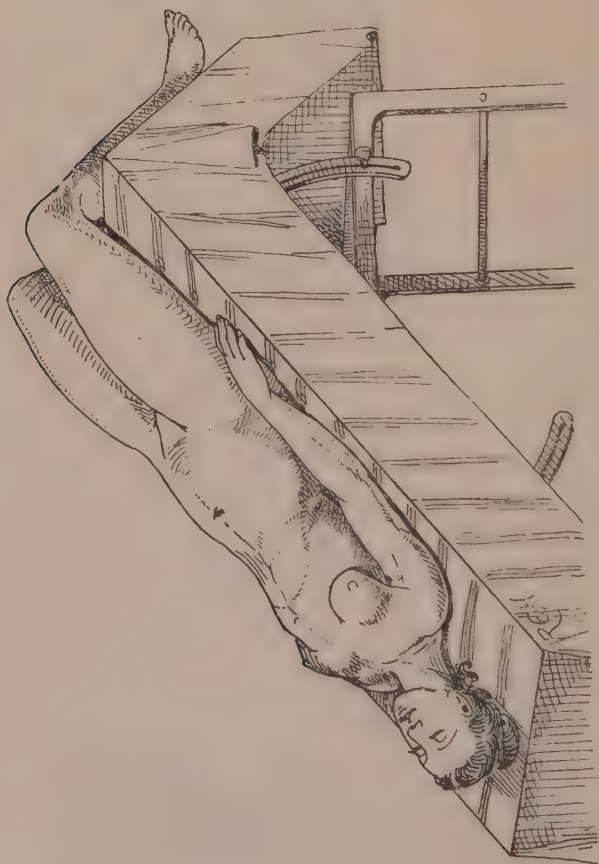


FIG. 26.—TRENDLENBURG POSITION.

The patient's bed (if the operation is to take place in the room in which the patient is to remain); a

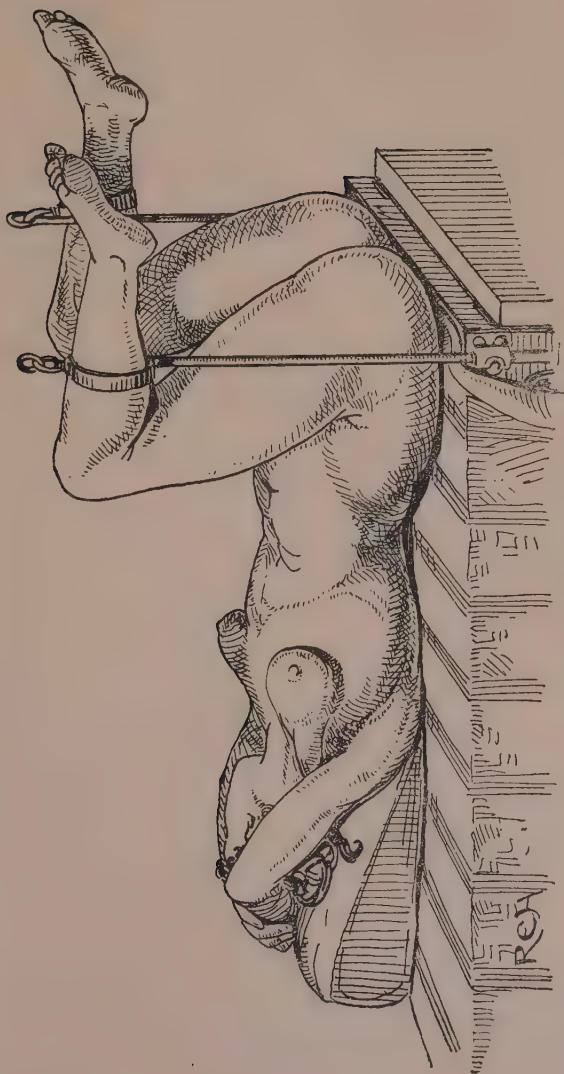


FIG. 27.—LITHOTOMY POSITION.

single bed is very desirable, as the nursing of a patient in a large double bed is a difficult matter. A double washstand. A good-sized table on which to place

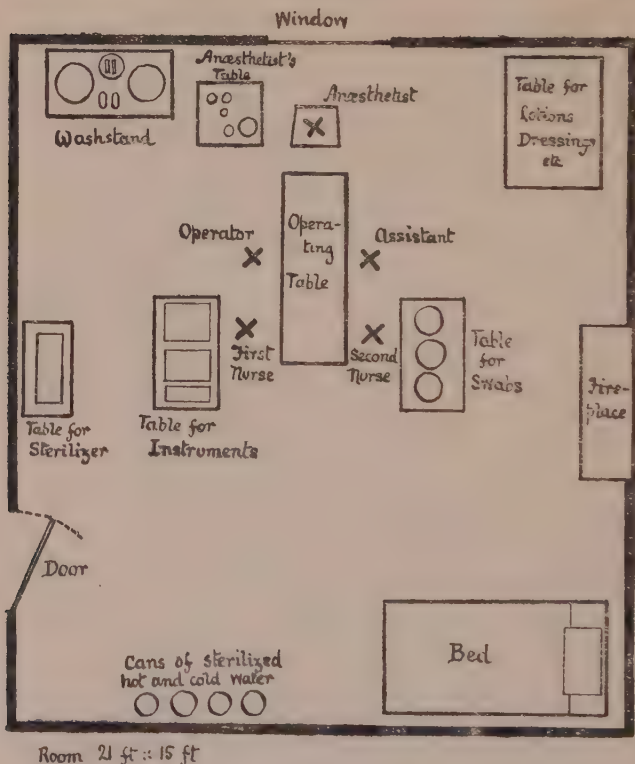


FIG. 28.—PLAN OF OPERATING-ROOM IN PRIVATE HOUSE.

bowls, dressings, and other things. Four small tables to accommodate respectively the instrument trays, the bowls for the swabs, the bowls for the lotions, and

the anæsthetist's requisites; these tables should be firm and of convenient size; they should be covered with clean towels, and, if they have polished tops, a piece of mackintosh or several layers of brown paper should be spread over them under the towels. Two chairs or stools—namely, one for the anæsthetist, and one for the patient to step on to get upon the table; in the case of a vaginal operation the second chair is placed later for the surgeon's use. Lastly there is the operating-table. For abdominal operations a proper surgical operating-table is always an advantage, and if the Trendelenburg position is required it is a necessity, although an extempore Trendelenburg position has before now been rigged up by the use of a chair, as shown in Fig. 25. The proper Trendelenburg position is shown in Fig. 26. For vaginal operations a firm deal kitchen table answers very well, and failing this two small tables can be placed end to end, and when the patient has been placed in the lithotomy position the table that supported her legs is removed. With a proper operating-table the legs are supported by means of upright rods, as shown in Fig. 27. The accompanying plan (Fig. 28) shows a convenient arrangement of the furniture in the operating-room, as well as the positions of the doctors and nurses during an abdominal operation.

Cleaning the Room.—As I have said, it is inadvisable to place the room in a turmoil just before an operation. When the room can be got ready a day or two beforehand, the carpet may be taken up, the

floor scrubbed, and a drugget or dust-sheet laid down. Curtains and other hangings can be taken down, and the woodwork of the room washed. If the floor is covered with linoleum, loose rugs and carpets can be removed and the linoleum washed. When an operation is done at short notice, and in any case with a fitted carpet, the best plan is to lay down large pieces of brown paper, and then spread a large drugget or dust-sheet and tack it lightly down; otherwise the room is disturbed as little as possible, so as to avoid raising dust.

2. Preparation of Accessories.

Hot and Cold Water.—This is required in abundance, and it must be sterilized. A quantity of water should be boiled the night before, and stored in clean cans or jugs, whose mouths are then tied over with gauze. In this way we shall have plenty of cold sterilized water when we want it. On the morning of the operation more water is boiled and stored ready for use, and two or three kettles of boiling water should be available for use in the sterilizers.

Towels.—A couple of dozen of these will not be too many. They are required, not only for the drying of hands, but for covering the tables, for the anæsthetist's use, for drying the patient and the instruments at the end of the operation, and for covering the patient during the operation. Ordinary clean towels will answer for most of these purposes, but for covering the patient the towels must be sterilized. If a sterilizer

is not available, these towels, six in number, should be boiled in a clean saucepan, and wrung out as required.

Mackintoshes.—Four of these are useful: two fairly large ones to go on the patient's bed and under the patient on the operating-table; and two smaller ones to be placed, covered with sterilized towels, above and below the field of operation. Jaconet answers quite well for the two smaller mackintoshes.

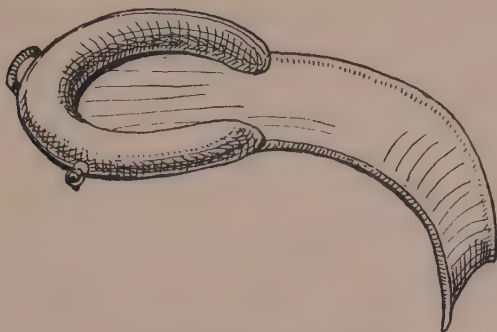


FIG. 29.—KELLY'S PAD.

For vaginal operations a Kelly's pad (Fig. 29) is very useful; it saves the patient from getting wet, and also acts as a conduit to direct lotions down into the pail or foot-bath.

Hot-Water Bottles.—It is advisable to have three or four of these, preferably the india-rubber ones. Stone bottles will do, however, and in an emergency wine or beer bottles can be filled with hot water, or a brick can be heated in the oven and wrapped round

in flannel. One hot-water bottle is placed between the patient's feet during the operation, and two or three are put into the bed before the patient's return. Many operators make it a rule never to allow a hot-water bottle in bed with an unconscious patient.

Bowls and Dishes.—The following should be provided if possible: Three flat enamelled iron or porcelain dishes for instruments; six good-sized enamelled bowls for swabs, towels, gloves, and lotions; six smaller bowls for various purposes, such as receiving parts removed, catching discharges, holding small quantities of lotion, or for the anæsthetist's use if the patient is sick. A large foot-bath should be placed under the table to take soiled things, and two or three kidney trays come in useful.

Washing Materials.—Two new nail-brushes should be boiled and placed in a bowl of lysol ready for the use of the operator and his assistant; two washing basins and two pieces of soap should also be provided.

Lotions.—Different operators have different tastes in the matter of lotions. They are used almost exclusively for the hands, since everything else that comes in contact with the wound can be sterilized with heat. Lysol of the strength of 1 drachm to the pint is always useful. My own preference is for biniodide of mercury—namely, one bowl of 1 in 1,000 in rectified or methylated spirit, and one bowl of 1 in 2,000 in water. The hands are soaked first in the spirituous, and then in the watery, solution.

Sundries.—Among the things that should be

ready to the hand in the operating-room are the following:

Sterilized Salt Solution.—This should be kept in concentrated form, so that by adding sterilized water at a suitable temperature “normal saline solution” may be obtained. The strength of this is one teaspoonful of salt to each pint of water, and it is usually required at a temperature of 100° to 105° F. It may be wanted either to flush out the abdomen or for venous transfusion.

Pure Carbolic Acid is sometimes used to touch the stump of the appendix in appendicitis operations; the stumps of the Fallopian tubes when operating for pyosalpinx; or the cervical stump in a hysterectomy.

Iodized Phenol may be wanted to swab out the uterus after a curetting.

Chloride of Zinc in saturated solution is sometimes used for packing the cavity in the cervix left after scraping away cancerous growth.

Collodion.—Sometimes a collodion dressing is applied at the conclusion of an operation; and if a surgeon has a cut or abrasion on his hands, he may want to cover the spot with collodion before putting on his gloves.

3. Preparation of Swabs, Dressings, etc.

In this section we have to consider those things that are sterilized by steam or hot air in a proper sterilizer, and we may therefore begin by referring to the sterilizer.

In a well-equipped hospital a large sterilizer is an essential feature, because the success of all the surgical work in the hospital absolutely depends on it. Such

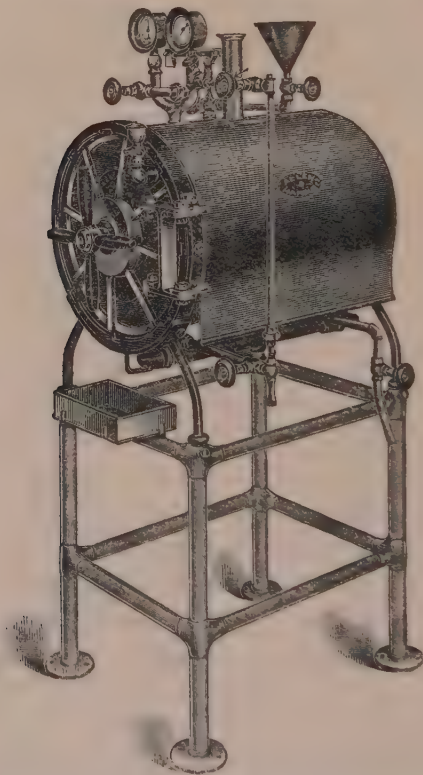


FIG. 30.—HIGH-PRESSURE STEAM STERILIZER FOR DRESSINGS, ETC.

a sterilizer is shown in Fig. 30. In it are placed the drums, or other suitable tins, filled with the various articles to be sterilized.

For private work and in nursing homes where a much smaller amount of sterilizing is required, a very convenient and simple apparatus is Macdonald's sterilizer (Fig. 31). This is worked as follows:

The sterilizer is constructed, as will be seen from the accompanying diagram, of an inner and an outer chamber with a space between, and fitted with a lid of a particular form. For use a quantity of water is

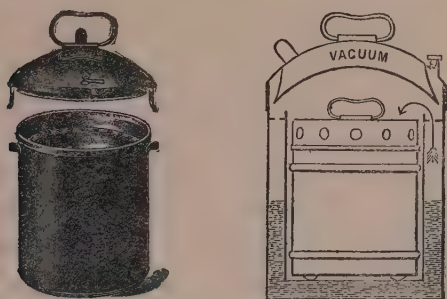


FIG. 31.—MACDONALD'S STERILIZER FOR DRESSINGS.

placed into the space between the cylinders, the dressings, loose or in canisters, are placed in the inner chamber, the lid fixed, the steam exit on the lid opened, and the whole instrument placed on the fire or gas-ring. In a few minutes steam issues vigorously from the escape tap, the temperature of the inner chamber rises to the temperature of the boiling water-jacket, the cold air of the inner chamber is expelled, being displaced by saturated aqueous vapour at 100° C. The sterilization is continued for at least half an hour after the steam has begun to issue

vigorously from the escape opening. The opening is then closed and the apparatus set aside to cool. The physical principle of aqueous vapour condensing first at the coolest part exposed is made use of to dry the dressings, and a glance at the diagrams will show that all condensation takes place in the outer chamber, the inside of the lid being prevented from cooling by means of a vacuum exhausted between the upper and lower layers of the lid. There is no heat or cold conduction through a vacuum, and therefore the lower layer of the lid remains hot for a considerable time during the cooling, thus effectually preventing any condensation on the lower layer of the lid, which would drip on the surface of the contents of the inner chamber. In consequence, after the instrument has been cooled, the dressings, etc., may be removed, and will be found to be perfectly dry and in the most suitable condition for use, and *this without any high-pressure apparatus whatever.*

For an ordinary abdominal operation the articles to be sterilized are—

1. Two or more surgeon's overalls, with caps or veils, if these are worn.
2. Two nurse's overalls.
3. Six towels, or more if convenient.
4. A many-tailed bandage. This should be made of flannelette, domette, or calico, cut into strips about 4 inches wide, and sewn on to a vertical piece (which will lie against the back) in such a way that each strip slightly overlaps the one below it. The length

of the strips will depend on the stoutness of the patient, and will vary from 36 to 48 inches.

The whole depth of the bandage from above down when finished should be about 10 or 11 inches; four strips of 4 inches each, with $1\frac{1}{2}$ inches of overlapping, will give a correct depth. An extra strip

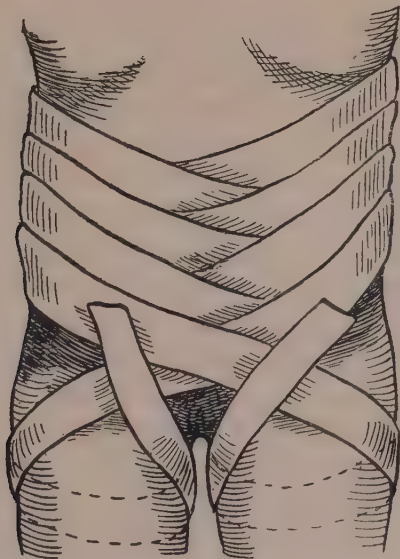


FIG. 32.—MANY-TAILED BANDAGE WITH THIGH-PIECES.

should be sewn by one end to the middle of the lower border of the bandage, so that it can be brought up between the legs to form a perineal band. This holds the bandage in place. An even better way to secure the same result is to have the lowest strip double the length of the others; each end of this

strip can then be carried round the corresponding thigh (Fig. 32).

5. Dressings. These will consist of plain gauze and absorbent wool. Two square yards of gauze and 4 ounces of wool are amply sufficient for an ordinary dressing. For many cases half these quantities will suffice.

6. Swabs. Formerly marine sponges were in great request for operations; they were costly and difficult to sterilize, and their use has been superseded by swabs or pads. Pads made of six or eight folds of gauze sewn round the edges are sometimes used; but gauze by itself is very unsatisfactory, and it is best to make the swabs of square pads of gamgee tissue sewn round the edges, or layers of absorbent wool sewn into square gauze bags. Some surgeons use a large number of swabs during an operation, but this practice has the disadvantage that the swabs are more difficult to keep a correct account of, and there is consequently an increased risk of one being overlooked and left behind in the abdomen. I therefore prefer to work with not more than one dozen swabs; four of these should be large, about 8 inches square, or 6 by 8 inches—these are used for putting inside the abdomen to restrain the bowels; and eight should be smaller, about 5 inches square. It is useful, however, to have a reserve of twelve more of the smaller swabs, tied up in two packets of six in each, to be used only in case of need. When working with a small number of swabs, each one after use is dropped into a bowl

of sterilized water; and then, if necessary, they can be washed and used again. For hospital use, this plan, besides being safer, effects a very considerable economy. For instance, on a day when six abdominal operations are done, six dozen swabs will probably suffice; whilst if unlimited numbers are used, thirty dozen swabs may easily be required.

For a vaginal operation, overalls and towels will be required as before, but instead of a many-tailed bandage a perineal or T-bandage must be prepared, and it is not always necessary to have swabs sewn round the edges. Instead of this, pulled wool soaked in water or a weak antiseptic may be used, or small swabs made of a little wool tied into a bag of gauze. For the dressings some gauze will be required, and a pad of wool; it is often convenient to have the gauze in strips of varying widths wound into small rolls.

4. Preparation of Instruments.

The method of sterilizing instruments has already been described. In private operation cases the surgeon brings his instruments with him, and the nurse has only to sterilize them. In hospital work the theatre nurse has to get out the necessary instruments, and it may be useful to give a list of those required for various gynecological operations.

(a) *Abdominal Operations.*

The principal abdominal operations on the female pelvic organs are as follows:

1. **Ovariectomy.**—This means the removal of an ovarian tumour or cyst; it may be single or double, according as the disease affects one or both ovaries.

2. **Salpingo-Oöphorectomy.**—This term is used to indicate the removal of the ovary and Fallopian tube of one or both sides for conditions other than ovarian tumour, especially for inflammatory conditions, such as hydrosalpinx and pyosalpinx, and for extra-uterine pregnancy.

3. **Hysterectomy** means the removal of the uterus; the operation is done chiefly for fibroids, fibrosis, carcinoma, and sarcoma, and sometimes it is done in conjunction with ovariectomy or salpingo-oöphorectomy, when the uterus, though otherwise healthy, is intimately attached to the tumours or involved in the inflammatory process. On the other hand, when a hysterectomy is done for uterine tumours, it may be necessary to do an ovariectomy or salpingo-oöphorectomy as well—either because the ovaries and tubes are diseased, or because they are so attached to the uterine tumour that they cannot well be left. The complete removal of uterus, ovaries, and tubes, is sometimes described as a *total extirpation*; this course is always adopted when a hysterectomy is done for malignant disease.

4. **Wertheim's Operation** is a special operation for cancer of the cervix; the ureters and bladder are carefully freed from the uterus, a clamp is placed across the vagina below the cervical growth, and the uterus, ovaries, tubes, and upper part of the vagina,

are all removed in one piece. This is one of the most extensive of gynæcological operations.

5. **Myomectomy** is the removal of a fibroid tumour from the uterus without the removal of the uterus itself.

6. **Hysteropexy, Ventrofixation, or Ventrosuspension**, is an operation for sewing up the uterus to the abdominal wall; it is done in cases of displacement, and is sometimes combined with other procedures, such as curetting, trachelorrhaphy, colporrhaphy, or perineorrhaphy. The *radical cure of uterine prolapse, or procidentia*, comprises hysteropexy, colporrhaphy, and perineorrhaphy.

7. **Alexander's Operation** has for its object the shortening of the round ligaments of the uterus as they pass down the inguinal canal to reach the vulva. It is undertaken for cases of backward displacement of the uterus. The abdominal cavity is not actually opened. Various modifications of this procedure have been introduced in which the abdomen is opened and the round ligaments shortened within the peritoneal cavity.

8. **Cæsarian Section** means the removal of a child from the uterus by an abdominal incision when there is some insuperable obstruction to the birth of the child by the ordinary process of labour. This obstruction may consist of a contraction of the pelvic bones or some ovarian or uterine tumour.

9. **Cœliotomy** is a general term used to indicate that the abdominal cavity is opened; other terms

are *laparotomy* and *abdominal section*. When an operation is undertaken for the removal of a tumour, and it is found that the tumour is too extensive for removal, an *exploratory cœliotomy* is said to have been done. An exploratory cœliotomy is occasionally resorted to when a patient has persistent pain, and nothing definite is found to account for it.

The instruments required for an abdominal operation are as follows :

Two scalpels.

Three dissecting forceps.

Three pairs of scissors.

Twelve to eighteen artery forceps.

Two ovum forceps (Fig. 33).

Two volsellæ (Fig. 34).

Two swab-holders (Fig. 16).

Retractor. A useful self-retaining retractor is shown in Fig. 35.

Two needle-holders.

Needles, curved and straight.

Suture material.

Drainage-tubes of different sizes.

It is, of course, possible to multiply instruments indefinitely, and some operators use various special implements; but any ordinary abdominal operation on the pelvic organs can be done with the above list. For many operations a simpler outfit is sufficient, but there is a proverbial uncertainty as to what is present in the abdomen before it is opened, and I

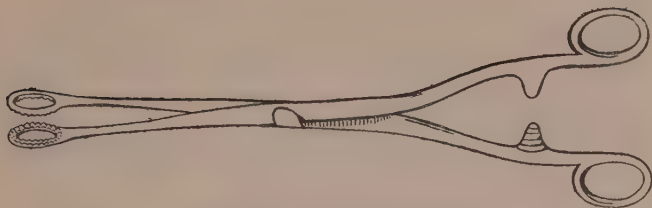


FIG. 33.—OVUM FORCEPS.

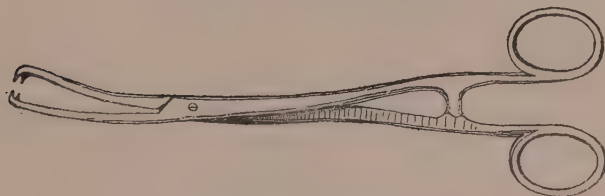


FIG. 34.—VOLSELLA.

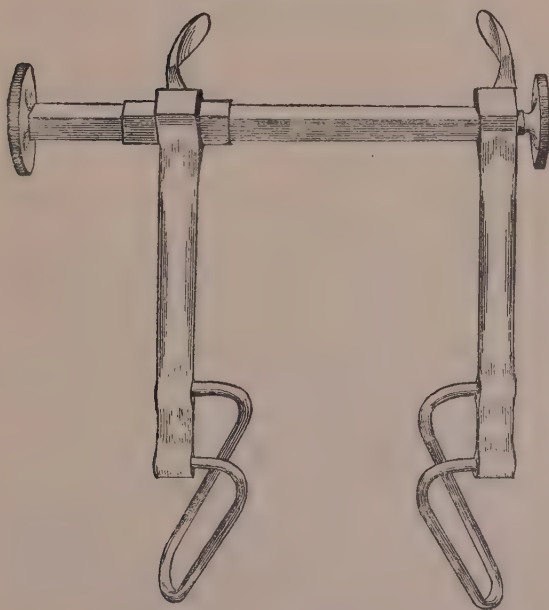


FIG. 35.—SELF-RETAINING RETRACTOR.

have therefore given a full list. In the case of total extirpation of the uterus by Wertheim's method, some form of vaginal clamp is required in addition ; whilst if trouble with the bowel is anticipated it is well to be provided also with bowel clamps.

A few words may be added concerning needles and suture material.

Needles.—The most useful curved needles are Bonney's. They are curved on the flat, so that they can be held in an ordinary pressure forceps, and the eye is circular, so that they are easily threaded. Several sizes should be provided. If bowel work is contemplated, some round-bodied curved needles and some straight cambric needles are useful ; whilst for the continuous sutures, such as may be employed for the peritoneum and skin, straight bayonet-pointed needles are convenient, some $2\frac{1}{2}$ inches and some 4 inches long.

Suture Material.—The safest and most convenient material is silk ; it can be boiled for an hour just before operation. Japanese silk is better than the ordinary twist, because it does not unravel, and because it can be obtained fine in proportion to its strength. Three sizes—very fine, medium, and strong—suffice for all ordinary purposes.

Other materials used by surgeons are these :

Catgut.—The drawbacks of this are that it is difficult to sterilize, and that if used for sewing up the abdominal wall it may give way under the strain of vomiting or coughing. Van Horn's catgut is quite

reliable as regards sterility, but for hospital use it is expensive. A cheaper form of preparation is to soak skeins of catgut in a solution of iodine in spirit, namely, 1 part of tincture of iodine in 15 parts of rectified spirit. The catgut should be left in the solution for a week, and it can safely be left in for months. It should be placed in sterilized water shortly before use.

Silkworm-Gut, Pagenstecher's Thread, and Linen Thread, can be sterilized by boiling.

Kangaroo Tendon was in vogue for some time, but it is not often used now.

Silver Wire was also used at one time, but it is now almost obsolete. My own practice is to use nothing but silk for abdominal work, whilst for plastic work on the cervix, vagina, and vulva, I use catgut.

(b) Vaginal Operations.

In the following list of instruments required for various vaginal operations I enumerate such instruments as I should myself use; speaking generally, the nurse will necessarily modify the list according to the preferences of the operator for whom she is working.

It will be convenient to indicate briefly the nature of the operations as well as the instruments required.

1. **Perineorrhaphy.**—This means the repair of a perineum that has been torn during labour or other-

wise unduly stretched. When the tear extends into the rectum the rupture of the perineum is said to be complete, and the operation is called a *complete perineorrhaphy*, or a *perineorrhaphy for complete rupture*. When the tear does not extend into the rectum, we speak of a *perineorrhaphy for partial rupture*.

On a regular operating-table there is a special arrangement for holding the legs in the lithotomy position. When a vaginal operation is done on an ordinary table, this position is secured by an apparatus known as *Clover's crutch* (Fig. 36). It is understood in the under-mentioned lists that a crutch is provided in the absence of a regular operation-table.

Instruments required :

One pair of sharp-pointed scissors, either angular or curved on the flat.

One pair of blunt-ended scissors, curved on the flat.

Two pairs of dissecting forceps.

Six or eight pairs of pressure forceps.

Large and small curved needles.

Stout and fine catgut.

2. **Colporrhaphy.**—When the vaginal walls are relaxed, they can be shortened by dissecting off a portion of the mucous membrane and bringing the cut edges together. This operation is called “colporrhaphy,” and is further defined as “anterior” or “posterior,” according to the portion of the vagina

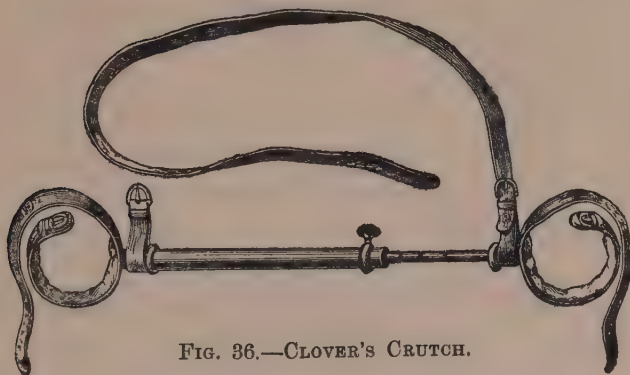


FIG. 36.—CLOVER'S CRUTCH.

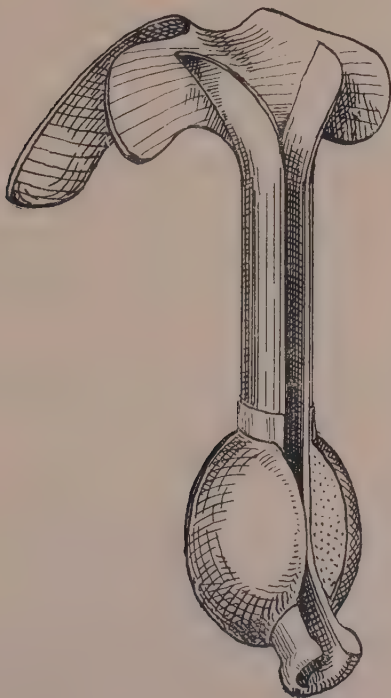


FIG. 37.—AUVARD'S SPECULUM.

concerned. For both procedures the following instruments are required :

Scalpel.

Scissors.

Two pairs of dissecting forceps.

Six or eight pairs of pressure forceps.

Swab-holders.

Needles and catgut.

For an anterior colporrhaphy an Auvard's speculum (Fig. 37) and a volsella should also be provided.

3. Colpo - Perineorrhaphy is a combination of perineorrhaphy and posterior colporrhaphy. The instruments required are those for a perineorrhaphy, with a scalpel in addition.

4. Removal of Tumours or Cysts of the Vulva.—The tumours chiefly concerned are carcinoma and fibromyxoma of the vulva, and the cyst most often dealt with is the Bartholinian cyst. For carcinoma the whole of the vulva may have to be dissected off, and a similar operation is sometimes undertaken for kraurosis of the vulva.

For these various procedures the instruments required are—

Scalpel.

Scissors.

Two pairs of dissecting forceps.

Eight to twelve pairs of pressure forceps.

Needles and catgut.

5. Operation for Urethral Caruncle.—A urethral caruncle is a small vascular, and often painful,

growth at the entrance of the urethra. It is removed, sometimes by dissection, sometimes by cauterization. The urethra may be dilated as a preliminary step; uterine dilators answer very well.

Instruments required:

Thermo-cautery.

Scalpel.

Scissors.

Two pairs of dissecting forceps.

Six pressure forceps.

Small needles and fine catgut.

6. **Operation for Fistula.**—The fistulæ most often met with are *vesico-vaginal*, in which there is a communication between the bladder and the vagina; and *recto-vaginal*, between the vagina and the rectum. Operations are undertaken for the purpose of obliterating these communications.

Instruments required:

Auvard's speculum.

Volsella.

Scalpel with narrow blade.

Scissors.

Two pairs of dissecting forceps.

A dissecting forceps toothed at the points
and provided with a catch.

Six pressure forceps.

Bladder sound.

Small curved needles and fine catgut.

7. **Trachelorrhaphy and Amputation of the Cervix.**—By trachelorrhaphy is meant the repair

of the cervix when it has been torn during labour. Amputation is done in some cases of hypertrophy of the cervix.

Instruments required :

Auvard's speculum.

Volsella.

Uterine sound.

Scalpel.

Scissors.

Two pairs of dissecting forceps.

Six to eight pairs of pressure forceps.

Swab-holders.

Stout curved needles and catgut.

8. Dilatation and Curetting.—Dilatation of the uterine canal is done either on account of narrowing of the canal, causing dysmenorrhœa, or in order to reach the uterine cavity and treat it by curetting—*i.e.*, scraping—in cases of endometritis or polypus. After curetting, some antiseptic or caustic application is often made to the interior of the uterus.

Instruments required :

Auvard's speculum.

Volsella.

Uterine sound.

A set of dilators, such as Fenton's (Fig. 38).

Curette (Fig. 39).

Swab-holders.

Scissors.

Ovum forceps.

Uterine (Playfair's) probes.

Intra-uterine douche and nozzle.

Some iodized phenol and liniment of iodine should be provided.

9. Vaginal Myomectomy. — This means the removal of a fibroid from the interior of the uterus.

The instruments are the same as for a curetting, with the addition of a scalpel, dissecting forceps, long pressure forceps, needles, and catgut.

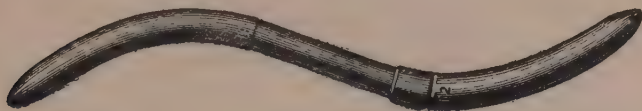


FIG. 38.—FENTON'S DILATOR.



FIG. 39.—FLUSHING CURETTE.

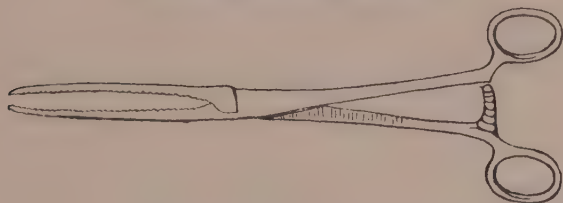


FIG. 40.—BROAD LIGAMENT CLAMP.

10. Vaginal Hysterectomy.—This operation was formerly much more often practised than it is now ; it has been almost entirely superseded by abdominal hysterectomy. It used to be done for cancer of the cervix or body of the uterus, for fibrosis, and occasionally for fibroids, when the uterus was not very large.

Instruments required :

Auvard's speculum.

Two volsellæ.

Bladder sound.

Scalpel.

Scissors.

Two pairs of dissecting forceps.

Six long pressure forceps.

Two broad ligament clamps (Fig. 40).

Special pedicle needles on handles.

Curved needles.

Silk and catgut.

CHAPTER VIII

PREPARATION FOR OPERATION—*Continued*

5. Preparation of the Patient.

IN order to get the best results after an operation, preparation must be begun some time before, and the first step is to keep the patient in bed for two or three days beforehand. By this means the nervous system is quieted and rested, the bowels can be regulated, and time is afforded for observation of the patient. The nurse is not, of course, expected to possess medical knowledge, but the watchful and observant nurse will be able to help the operator materially by calling his attention to various matters.

When the patient enters the home or the hospital, or when a nurse begins duty in a private house, the temperature, pulse, and respiration should be charted, the state of the bowels noted, and the urine examined. Here we have already some observations that the nurse can make.

Temperature.—If this is high, it may be due to the condition for which the operation is undertaken, and it will then be a reason for rather than against operation ; but if the condition be such as is not associated

with temperature, there may be some other condition present—for example, influenza, bronchitis, or early pneumonia—that would render postponement of the operation advisable.

Pulse.—An intermittent or irregular pulse may indicate heart trouble, and it is sometimes advisable to delay operation until the condition has improved; or the nurse may notice a tendency to faintness, or inability to lie down without distress, or œdema of the hands and feet. A rapid pulse may be due merely to the nervousness caused by the thought of the operation, but it may be due to internal hæmorrhage, when operation must be hurried forward; or it may be associated with the bulging of the eyes that is found in exophthalmic goitre, when it may be wise to postpone operation.

Many patients inquire anxiously whether their heart is strong enough to stand an operation. As a matter of fact, there are very few cases in which there is sufficiently serious heart disease to cause any anxiety, and even grave heart disease is not a bar in an urgent case; the patient must then run the risk. Valvular disease seldom gives trouble. The most dangerous cases are those of fatty heart and inadequate compensation. But in the presence of any form of heart disease special care is required, particularly when the time comes for the patient to get up. When fatalities have occurred, they have taken place much more often after the patient has got up than as the immediate result of the operation.

The presence of varicose veins, and especially of phlebitis, must prepare us to look out for thrombosis and embolism during convalescence, and entails extra care in allowing the patient to get up.

Respiration.—This may be very quick, as the result of chest trouble; if it is also laboured, as the result of pneumonia, empyæma, or asthma, operation must be deferred. Bronchitis is often a source of anxiety. In the acuter cases an operation should never be performed unless very urgent; but when it is of the chronic form, operation may be undertaken, with the proviso that ether should be avoided for the anæsthesia, and that every care should be taken to get through the operation as quickly as possible. When adenoids are present they may complicate the anæsthesia, and, when time allows, it is much better to have them removed before undertaking an abdominal operation.

The Bowels.—If the patient suffers from chronic constipation, and has an abdomen distended with flatus, vigorous aperient treatment is required. Suitable medicines—especially castor-oil, Epsom salts, and calomel—should be given two or three times, if necessary, followed each time by an enema. Some patients have loading of the colon of long standing, and the results of successive enemata will amaze anyone who has not had experience in these matters. The unloading of the colon not only minimizes trouble after the operation, but also promotes flaccidity of the bowels at the time, and thus materially facilitates the

performance of the operation. Another good result of attention to the bowels is the lessening of post-operative sickness.

The Toilet of the Mouth.—If the nurse finds that the patient's breath smells or that she has decayed teeth, it may be necessary for the mouth to be treated by a dentist. Oral sepsis paves the way to post-operative bronchitis, and is the cause of one of the complications sometimes met with after operations—namely, parotitis. It is well, therefore, for the mouth to be cleansed regularly with mild antiseptics before an operation. Artificial teeth will require to be removed just before the operation, lest during unconsciousness they be swallowed or obstruct the air-passages.

The Urine.—This should always be examined for sugar, albumin, and pus. Diabetes is a contra-indication to operations of expediency, but the presence of glycosuria apart from diabetes is no bar; in some cases it clears up rapidly after operation. Nephritis is another formidable complication, and when casts are found in the urine in addition to albumin, an operation should always be deferred, except in urgent cases, until the renal condition has improved. When it is necessary to operate on a patient who has albuminuria, chloroform should be preferred to ether as an anæsthetic. If pus is present, it is important that the fact should be known, not only for the guidance of the operator, but also so that the nurse may not get the blame for its presence after

the operation in cases where catheterization has been necessary.

Cleanliness.—It will be the nurse's duty to see that the patient's hair and person are clean, and, if they are not, to take the necessary steps to insure cleanliness.

Nervous System.—The nurse should note whether the patient sleeps well, whether she is nervous or hysterical or shows any disposition to act strangely. It is in the nurse's power to do a great deal to reassure and encourage a timid or frightened patient, and to brace her up to face her ordeal with courage and composure. Cases of chronic alcoholism are bad subjects for operation, and only great necessity should induce us to operate on them. Cases of mental instability and borderland cases should be undertaken with great reserve. These are the patients who are liable to develop acute mania and melancholia after operations, and they have supplied the bulk of the examples that have led to the tradition that operations on the pelvic organs cause insanity. I am persuaded that neither ovariectomy nor hysterectomy is followed by insanity, except in the case of those with a marked predisposition. It must also be borne in mind that many women have become neurasthenic and mentally unstable as the result of their pelvic disorders, and in such patients the operation is often followed by definite improvement in the mental condition.

We come now to the actual preparations for the operation.

Washing.—On the evening before the operation the patient should have a warm bath, if her condition allows; otherwise she should be thoroughly washed in bed.

Douching is not absolutely necessary as a matter of routine, but it is always salutary, and often necessary. Strong antiseptics should not be used; something mild is sufficient, such as biniodide of mercury (1 in 6,000), sanitas, weak lysol, or boracic acid. The douche should be given twice a day up to and including the morning of the operation day.

Preparation of the Abdomen.—In the case of a very nervous patient this may be left until she is under the anæsthetic, but this course has the disadvantage of prolonging the anæsthesia. In the great majority of cases the patient will readily resign herself to the necessary preparation, when it is carried out in a gentle and considerate manner. After the bath or washing previously mentioned, the vulva and pubes should be shaved, and the abdomen and vulva and adjacent parts of the thighs well washed with soap and water. Hard scrubbing is not necessary, and, in fact, it does more harm than good. If a nail-brush is used, it must be a soft one, and it must be used gently; a “washing glove” really answers better. The further steps of the preparation will depend on the wishes of the operator. The two principal methods have already been described (see p. 96).

In the case of an operation that will affect the integrity of the vaginal vault, especially hysterectomy,

it is advisable to pack the vagina with sterilized or double cyanide gauze after the evening douche, and again after the morning douche.

Food.—The last meal should be taken at least five hours before the operation, and it should be a light one. When the operation is timed for the early morning, a light dinner or supper should be taken the night before, and a cup of beef-tea in the small-hours of the morning. For an afternoon operation the patient should have a light breakfast, and nothing afterwards. The object of withholding food is to prevent sickness during and after the operation; but it must be remembered that a very long fast is also bad for the patient, particularly when the operation is a severe one, and therefore the interval between the last meal and the operation should not exceed five hours. Some anæsthetists even advocate shorter periods. The administration of glucose in teaspoonful doses three or four times a day for two days before the operation is believed to diminish post-operative sickness and minimize the risk of acetonæmia, and this practice is therefore followed in my wards.

Clothing.—A nightdress opening down the back should be worn for the operation, and over this a dressing-gown or jacket put on back to front, so that it can be removed easily when the patient is on the table. The chest should be warmly covered; the best arrangement is a kind of jacket of cotton-wool under the nightdress. The legs should be clad in clean long woollen stockings reaching up to the top of the thighs; or, if these cannot be obtained, a pair of

stockings and pyjama trousers will do very well as a makeshift. The hair should be dressed in two plaits.

Bowels.—If these have been kept well regulated for some days beforehand, it will be sufficient to give an enema about two hours before the operation. Otherwise a dose of castor-oil should be given the night before, followed by an enema in the morning.

Catheter.—When there is any doubt whether the bladder has been completely emptied, the catheter should be passed before the operation. It is also advisable in the case of tumours filling up the pelvis, as the bladder is then likely to be displaced. In ordinary cases the passing of the catheter need not be done as a matter of routine; it is sufficient if the patient is allowed to pass water naturally before going on to the operation-table.

In conclusion, the patient should be encouraged in a mood of cheerfulness and hope. Her mind should be led to think of the operation, not as a terrible ordeal or as a sacrifice at which she is to be the victim, but as a means of relief from her suffering and disease.

Preparation for a Vaginal Operation.

I have described so far the preparations necessary for an abdominal operation. For a vaginal operation the preparations are practically the same, except as regards the field of operation. Thus, there is no need for special treatment of the abdomen, and it is not always necessary to shave the whole of the pubes and

vulva. It may be sufficient, particularly if the patient prefers it, to shave the labia and perineum, and leave the hair on the mons veneris. The vulva should then be thoroughly washed with soap and water, using a "washing glove." If preferred, this washing can be left until the patient is under the anæsthetic. Douching should be done regularly two or three times a day before a vaginal operation, using an antiseptic such as biniodide of mercury, 1 in 4,000, or lysol or sanitas sypol, 1 drachm to the pint. This will not obviate the necessity for the douche at the beginning of the operation; because even if one has been administered an hour before, it will be found that mucus accumulates at the cervical orifice.

Preparation for Examination under Anæsthesia.

For this purpose shaving is not necessary; but the directions given about douching, emptying the bowels and bladder, and abstention from food, should be carried out just as if an operation were going to be performed.

Menstruation.

The nurse should always inquire whether menstruation is going on or expected shortly. Its occurrence would necessitate the postponement of a vaginal operation or of an examination under anæsthesia, but it is not generally a bar to an abdominal operation. Menstruation must be distinguished from hæmorrhage, as the latter may be an urgent reason for operation.

CHAPTER IX

THE OPERATION

WE may now suppose that all the preliminary preparations are completed. The furniture of the operating-room has been arranged; swabs, towels, and overalls, have been sterilized, and are ready for use in their unopened tins; the instruments have been boiled and put into sterilized dishes containing sterilized water; knives and scissors, which are not boiled, are ready in a narrow dish containing pure spirit; gloves have been boiled and put out into basins containing sterilized water; bowls containing spirit and biniodide lotion and plain biniodide lotion are placed where they can be used conveniently by the operator and his assistant; other bowls contain sterilized water, for the surgeons to dip their hands into during the operation; the operating-table has upon it a folded blanket covered over by a mackintosh, and over this a sheet; at the head end is a pillow, and a light blanket is ready to put over the patient. The surgeon and his assistant and the anæsthetist have arrived; and from this moment the nurses must arrange that at least one of them is in the room all the time, in case anything is wanted.

The anæsthetist has put out on the table what he requires, and says that he is ready for the patient, and the operator and his assistant are washing their hands.

The patient, having previously emptied her bladder, is brought into the operating-room or anæsthetizing-room. The nurse who is looking after her more particularly removes her dressing-gown and shoes, helps her on to the operating-table, covers her with a blanket, and stands by her while the anæsthetist starts the anæsthesia. Some patients get excitable in the early stages, and the nurse must be on the watch to see that the patient does not fling herself about.

It is only very rarely that any amount of force is required to hold her down, and all unnecessary restraint must be avoided; but in exceptional cases two or three people may be needed to prevent her from throwing herself off the table. Meanwhile the other nurse (or one of the other nurses, if we can have the ideal arrangement of having three nurses present) looks after the surgeons, and helps them on with their overalls.

The anæsthetist gives the word that the patient may be got ready, and if the Trendelenburg position is to be used, the patient is placed in that position. One nurse goes off to prepare her hands and put on gloves, so that she may handle the sterilized towels. The other nurse turns down the blanket as far as the pubes, and places a mackintosh over it, turning it in under the upper edge of the blanket. She draws up

the patient's nightdress so that it covers only the chest as far down as the margin of the ribs, rolling up its lower end so as to keep it clean and out of the way. A second, smaller mackintosh is placed over the patient's chest, and also turned in, under the lower border of the nightdress. The many-tailed bandage is undone, and the compress or lint removed from the abdomen. If the iodine method is being used, the front of the abdomen is painted over again with it. If the abdomen has not been prepared, the nurse brings a razor, soap and water, cotton-wool, ether, and either biniodide solution or iodine. The nurse who has her gloves on now gets out the sterilized towels; one is placed over the upper mackintosh, one (a large one) over the lower mackintosh, and two are tucked in at the sides of the patient. One way of doing this is to pass one end of the towel under the patient's arm (which is lying straight down by her side) and under her back; whilst the opposite or free edge of the towel is brought over the arm, and also tucked in under the back. In this fashion the arms are kept conveniently out of the way. Some surgeons like to have an operation sheet placed right over the other towels, with a slit in it over the operating area.

The gloved nurse now puts out the swabs, of which she knows the exact number, into a dry bowl, or into a bowl containing sterilized water, according to the wishes of the operator. By the side of this bowl is a second one, into which the swabs are thrown after use. When three nurses are present, one with gloved

hands sees to the instruments and the threading of the needles; one, also with gloved hands, attends to the swabs, and washes them out if necessary; whilst the third nurse, who is of course clean, but not necessarily sterilized, holds herself in readiness to fetch and carry and to handle things that have not been sterilized. She must on no account handle sterilized things that are going to be used, and the other nurses must on no account handle things that have not been sterilized.

During the operation the nurses should maintain strict silence unless spoken to, or unless they have to point out matters pertaining to the operation.

The intelligent nurse who is accustomed to work with a particular surgeon is able to render him the most valuable assistance during an operation by anticipating his requirements, and thus saving a great deal of time. At the Prince of Wales's Hospital and at the Chelsea Hospital for Women, I have frequently had the satisfaction of completing an operation without having had to ask for anything; at each stage it has been sufficient to hold out the hand to receive a swab, a particular instrument, or a special kind of suture, at the proper moment, and it is a pleasure to be able to make this acknowledgment of the high standard of efficiency and training which this implies.

It is the duty of the nurse who is in charge of the swabs to see that she has the proper number before the surgeon starts sewing up the abdomen. Probably

the surgeon will ask her if she has them all; if he does not do so, she must be on the alert, and on no account allow him to complete his sewing up as long as she is short of a swab. Similarly, it is the duty of the nurse in charge of the instruments to see that she has the correct number of forceps, etc., before the sewing up is done, or, at least, to see that the proper number is accounted for by those that she has and those that she can see about the wound.

The surgeon is, of course, the person morally and legally responsible for not leaving swabs or forceps in a patient's abdomen; but he is usually obliged to depend on his nurses for assistance in seeing that the numbers are correct.

As the end of the operation approaches, the nurse gets ready a bowl of warm sterilized water and some clean swabs for washing up the abdomen; then the dressings (sterilized gauze and sterilized wool) are handed to the surgeon, and lastly the sterilized many-tailed bandage. During this time the second nurse sees that the bed is ready for the reception of the patient; the bed has already been well warmed with hot-water bottles, and a knee-pillow is at hand to put under her knees, and a cradle, if necessary, to put over the abdomen, to keep off the weight of the bedclothes. If a proper cradle is not available, an extempore one can readily be rigged up by sawing a child's wooden hoop in halves, and tying together the two half-hoops by their middles.

To return to the patient: The nurse must see that

she is quite clean, and that no spots of blood have been left about her. If the nightdress has become soiled or wet, it is sometimes an advantage to put on a clean one, well warmed, before the patient is lifted off the operating-table.

The patient is now put back into bed; the best position in which she can lie is on her back, but turned over slightly to one side, with a pillow under the raised shoulder. The face should also be turned to the side, and a towel should be placed round the neck and under the face, so that, if sudden sickness should come on, the nightdress, the pillow, and the patient's hair, may not be soiled.

The windows should be opened, the blinds drawn down, and one nurse should sit beside the patient. Meanwhile, if the operation is in a private house, the other nurse washes the instruments, dries and powders the gloves, and generally helps the surgeon to get his things together.

Vaginal Operations.

The description so far given applies mainly to abdominal operations. For a vaginal operation some modifications are necessary.

In the preliminary preparations the principal difference is in the instruments to be got ready, and in the kind of swabs to be prepared, as described in Chapter VII.; for vaginal operations a douche must also be ready, consisting of biniodide solution, lysol,

sanitas, or plain water, at the discretion of the operator.

The anæsthetist having given the word that the patient may be got ready, the legs are raised into the lithotomy position by means of stirrups or a Clover's crutch; a mackintosh or Kelly's pad is placed under the hips and covered with a sterilized towel; a second towel is placed over the lower part of the abdomen, and a towel or other sterilized covering is placed over the legs and thighs. If a bandage or dressing has been applied over the vulva, it is removed.

The nurse who is going to handle instruments prepares her hands and puts on gloves; the second nurse places a stool or chair for the operator, and then brings the douche-can and holds it while he gives the douche. The swabs need no special looking after, for if they are placed in a basin close at hand the operator or assistant can help himself; and there is seldom any question of counting the swabs, as it is practically impossible for one to be left behind, unless the peritoneal cavity is opened, as is done in the case of a vaginal hysterectomy. For this particular operation the same care must be exercised in the counting of forceps and swabs as is done with an abdominal operation.

The douche may be required during the operation or at the end, and it must be held in readiness.

In the case of a curetting, the nurse should be ready to hand to the surgeon some dressed Playfair's

probes with which to apply solutions, such as iodized phenol, to the interior of the uterine cavity.

At the conclusion of the operation a strip of sterilized gauze may be required for packing the vagina; then a pad of sterilized absorbent wool is placed against the vulva, and kept in place with a T-bandage. The wool should be broad enough to insure that the bandage does not cut into the skin at the folds of the thighs.

The towels and mackintoshes are removed, the legs released from the crutch or leg-rests, and the patient is put back to bed as previously described.

CHAPTER X

AFTER-TREATMENT OF ABDOMINAL OPERATIONS

UNTIL the patient recovers consciousness completely she should never be left alone ; if the nurse is single-handed, she should arrange that, whenever she has to leave the room, someone in the house—a relative, a friend, or a maid—should sit by the patient in her absence. The reason is that during this stage the patient is not accountable for her actions ; she may partially awake, and want to sit up or even get up. Moreover, this is the stage when sickness is most apt to occur, and during unconsciousness the patient wants assistance, lest she should get mucus and fluid at the back of the throat, and choke or get it into her air-passages.

When vomiting occurs, the patient should be turned gently over to one side, a bowl placed in a proper position under the mouth, and the nurse should place her hand gently but firmly over the abdominal wound to protect it from undue strain. When the patient is conscious, she can support the abdomen herself. Great care must be taken that the patient's clothes and hair do not get soiled with vomited matter, and

after use the bowl should always be emptied at once, and not left unemptied near the patient's face.

Very often the patient throws her arms about and uncovers herself, and she requires careful watching on this account, lest she should catch cold.

Saline Injection.—The first thing for the nurse to do, when the patient is settled in bed and quiet, is to administer a saline injection by the rectum. It should be given by means of a douche-can and long tube, the can being placed at such a height, and the flow so moderated, that the fluid passes in very slowly—namely, about a pint in half an hour. The temperature should be 105° F., and the can should be covered and wrapped round so that it does not cool down too much.

I like the saline given as a matter of routine after abdominal operations, and only countermand it in certain cases, as, for instance, when there is a risk of oozing from adhesion sites. The saline counteracts shock and diminishes the tendency to thirst.

On waking up, thirst, sickness, and pain, are the things generally complained of. The mouth may be washed out frequently with hot water, either plain or slightly flavoured with lemon, sal volatile, or brandy, in order to help to remove the taste of the anæsthetic.

Pain.—If the pain is only slight, the patient should be encouraged to bear it, with the assurance that it will gradually get less. If it is severe, and the patient is restless, 10 grains of aspirin or ammonol may be given by the mouth, or 15 grains of aspirin, or 20 grains of

ammonium bromide with an equal dose of chloral may be administered by the rectum, either alone or with the saline injection. I do not on any account allow morphia to be given; the immediate ease obtained is too dearly bought when the price to be paid afterwards is paralysis of the bowel, distension, and threatened or actual obstruction. In nearly every case (happily, not many) in which morphia has been given I have had the gravest anxiety afterwards, and several of the patients have died. It would be going too far to attribute the death directly to the morphia, for they have mostly been grave cases with suppuration and bowel adhesions; but I have always felt that the morphia has lessened the patient's chances of recovery. I therefore have a strong conviction that the administration of morphia after an abdominal operation is very dangerous.

It sometimes happens that the cause of pain is the fact that the binder is too tight; it must be remembered that it is applied while the patient is unconscious and cannot tell us whether it is uncomfortable. It is always permissible for the nurse to loosen the binder—of course, without disturbing the dressings.

Position.—Another frequent cause of pain is that the patient is cramped from lying too long in one position. It is not advisable for the patient to move herself about, but it is safe and proper for the nurse to move her gently a little over to one side or the other; she may raise the patient's head and shoulders,

raise the knees or lower them a little, and, in fact, do anything to release her from the purgatory of immobility.

The patient must of course be impressed with the fact that her conjugation of the verb "to move" must be entirely in the passive mood. Moreover, she must not be constantly moved about; but she may be left in one position for an hour or two, or as long as she is comfortable.

The treatment of septic peritonitis by means of Fowler's position has given us an indication for dealing with normal cases. In this position the patient is made to sit up almost vertically with a bedrest as soon as she recovers consciousness; and to prevent her from slipping down, straps or bandages are fastened to the ends of the knee-pillow, and their other ends are fixed to the head of the bed in such a way that she sits in a kind of sling. Now, if septic patients can assume this position with comfort, there is no reason why uncomplicated cases should not be similarly treated, and as a matter of experience we find that patients get great relief from this posture; they are able to sleep, they show less tendency to sickness, and the backache is almost entirely done away with. I have adopted this position as a matter of routine after abdominal operations, and have been very pleased with the results. It is not, of course, necessary or desirable in an ordinary case to keep a patient constantly sitting up; she may be allowed to assume the horizontal position from time to time, and espe-

cially at night. During the day, and particularly for meals, sitting up is a great relief; and when such a patient begins to get up, she is stronger, and shows less tendency to faintness, than one who has been kept recumbent the whole time. Naturally, with a very anæmic patient, or with one who is suffering from shock, the sitting-up posture is contra-indicated.

Food.—A certain amount of discretion must be exercised in the question of nourishment after operation, as a good deal depends on whether the patient is sick or not. In the absence of sickness there is no necessity for the long period of starvation that used to be enforced. Drinks of hot water may be allowed within a few hours, and six to eight hours after the operation a small drink of milk-tea can be given. If this is retained, and the patient does not feel sick, milk and barley-water in equal parts are given in gradually increasing quantities every hour, varied with drinks of milk-tea or milky coffee, cocoa, beef-tea, Benger's food, cornflour, or milky gruel. A little Brand's jelly is often enjoyed. This type of nourishment is kept up for forty-eight hours; then, when the bowels have acted, solid food is begun in the form of bread and butter with the tea, a lightly boiled egg, and custard. About the fourth day we may give a purée of fish, minced meat, or boiled sole or plaice; chicken, sweetbread, fried sole, or game, with milk puddings, then forms the diet for the remainder of the first week. From the second week onwards the diet gradually assumes normal proportions, vegetables and

stewed fruits being added. When a patient shows a continued tendency to sickness, food by the mouth is often best withheld for twenty-four hours, and a nutrient enema consisting of 4 ounces of peptonized milk and 2 drachms of meat-juice is given every four hours. I very seldom order stimulants after operation, but I occasionally allow them if the patient has been accustomed to them and requires some incentive to appetite. Without any prepossession against alcoholic compounds, I believe that they are rarely necessary, and that they may advantageously be replaced by hot milk.

Attention to the Bladder and Bowels.—In most cases, when a patient is able to pass water naturally, she should be allowed to do so. If she is not able, the catheter must be passed at intervals not exceeding eight hours. Sometimes a patient is not able to relieve herself naturally for some days, and even (as I have known in a few instances) for a week or two. If a patient seems to be hysterical or “faddy,” she must be humoured. I have in mind the case of a patient who was told that her inability to pass water was all nonsense, and that she must strain till she managed it. She was not wanting in willingness, and she strained to such purpose that she burst open her wound, with protrusion of the bowel and the subsequent development of a faecal fistula. On the other hand, some patients require to pass water frequently; it is the refinement of cruelty in such a case to insist on a bedpan drill at fixed hours, and the

nurse should be given to understand quite clearly that the patient's requirements in this respect must now be complied with, however exacting, or even capricious, she may appear.

With regard to the bowels, it is always advisable, and often essential, that they should be opened early. I advocate a dose of castor-oil twenty-four to thirty-six hours after an operation, followed in a few hours by an enema. If distension is causing distress, and is not relieved by the passing of a rectal tube, a turpentine enema may be given within twenty-four hours. For the remainder of the time when the patient is in bed she will probably require an aperient at intervals; syrup of figs, senna pods, liquorice-powder, aloin, or cascara, may be given, with a dose of calomel if necessary, and an occasional enema. Sometimes salines answer very well, given in repeated doses. In cases of sickness or of threatened sepsis, an excellent plan is the administration of calomel in small doses of one-sixth to one-half of a grain every hour for six doses, or until a result is obtained.

The Pulse, Temperature, and Respiration, should be recorded every four hours for the first week, and twice a day afterwards, because they give valuable indications as to the patient's progress.

The Dressing.—As a rule the dressing may be left untouched for a week; all that is necessary is to adjust the binder from time to time. When this becomes loose, as it does when a patient who has been troubled with distension has been relieved by

an enema, it should be tightened. It is important that the nurse should see that the dressings do not work up in such a way as to leave the lower part of the wound uncovered ; if this happens, the wound is liable to become infected. To prevent such an accident, the binder should be kept down by means of thigh-pieces or a perineal bandage, as previously described ; a pad of wool between the bandage and the patient's skin will prevent chafing.

On the eighth day the wound is dressed and the stitches are removed ; fresh gauze and wool are placed over the wound, and the binder is reapplied. A few days later a simple collodion gauze dressing may be put on, and by the end of the second or third week all dressings may be omitted.

A surgical belt is hardly ever necessary, especially when the three-layer method has been used for securing the wound. A belt is heavy and cumbersome, and discourages the abdominal muscles from recovering their normal tone. When patients feel that they would like a little support for the first few weeks, I advise them to wear a woven or knitted woollen garment of the type known as a "cholera" or "Jaeger" belt.

Massage.—Many patients derive great benefit from massage. It may be begun on the limbs and chest a week after operation. At the end of the second week it is extended to the abdomen. When these patients get up, they are markedly stronger than those who have had no massage.

Getting up.—Patients should be kept in bed for not less than two weeks after an operation. This is the regulation time for my hospital patients. In other cases three weeks may be allowed, or longer if special circumstances require it. The first day the patient is transferred to a couch for an hour or two; on the next day she may sit up on the couch with her feet down, and try walking a little. The day after she can sit on a chair, and walk about rather more. When she has been up for four or five days she may go downstairs, or go out for a short drive. At the end of a month from the time of operation she is well enough to leave the home and go away for a change.

Later Convalescence.—A careful medium course must be followed between letting a patient do too much or get about too soon, and allowing her to remain an invalid; and a good deal depends on the attitude of the medical attendant. Some patients are encouraged to think themselves invalids for months, and even years, and this is a mistake. After any ordinary uncomplicated abdominal operation, the patient should quite cease to be an invalid at the end of three months, and should be able to resume ordinary avocations, with only this reservation, that she should not undergo strenuous and fatiguing exercise, such as tennis and cycling, for yet another three months. But walking may be freely allowed, and I have known a patient resume golf with comfort and pleasure four months after an abdominal hysterectomy for fibroids.

In hospital practice, where it is necessary to have a routine plan applicable to the majority of cases, such plans as those adopted at the Chelsea Hospital for Women, and the Prince of Wales's General Hospital, Tottenham, may be carried out with advantage. They err, if anything, on the Spartan side. Miss Annie Howard, the Sister in charge of my wards at Chelsea, has kindly drawn up for me a time-table, based on the fact that my patients are operated upon on Monday afternoons. It shows the routine plan which is followed in an ordinary case. Miss Ada Simmonds, Sister of the Louise (gyræcological) ward at the Prince of Wales's General Hospital, Tottenham, has also kindly made a schedule of the plan which is carried out in a normal case under her charge. I append both these plans, as they may serve as a useful guide in abdominal cases :

CHELSEA HOSPITAL FOR WOMEN

OPERATION, MONDAY, 2 P.M.

MONDAY.

Diet.—Water, hot or cold, by the mouth, as soon as the patient is conscious, if there is no vomiting, and food commenced eight hours after operation : milk, tea-milk diluted with water, or barley-water, 2 ounces hourly, and water *ad lib.*

Treatment.—Saline 1 pint *per rectum* on patient's return from theatre. Catheter six-hourly for the

first twenty-four hours if necessary. Rectal tube four-hourly. Four-hourly chart.

TUESDAY.

Diet.—Fluids, 5 ounces two-hourly: milk, beef-tea, coffee, or tea.

Treatment.—Patient is propped up. Rectal wash-out or enema given if patient is distended or complaining of flatulency. The usual formula is turpentine, 2 ounces; olive-oil, 4 ounces; soft soap, 4 ounces, with water to 2 pints.

WEDNESDAY.

Diet.—Benger's food, cornflour, arrowroot, egg-flip, broth, beef-tea, coffee, milk, etc., 5 ounces two-hourly (more if possible); Brand's jelly, custard, and bread and butter without crust, with their tea.

Treatment.—Turpentine enema in the early morning (8 a.m.), followed by an aperient—ol. ricini 1 ounce or mist. cascar. 1 ounce.

THURSDAY.

Diet.—Boiled sole or plaice and custard for dinner.

FRIDAY.

Diet.—Fish boiled or fried; chicken or game and milk puddings.

Light diet continued for a week. Ordinary diet about the end of the second week.

Seventh Day : Sutures removed and four-hourly chart discontinued.

Fourteenth Day : Patient sits up in a chair.

Eighteenth Day : Patient goes to the convalescent home at St. Leonards-on-Sea.

PRINCE OF WALES'S HOSPITAL, TOTTENHAM
OPERATION, THURSDAY, 2.30 P.M.

THURSDAY.

- 3 p.m. : Return to bed. Saline (*per rectum*) 1 pint, or more if necessary.
- 6 p.m. : Face and hands sponged ; one or two pillows given ; spica put on to secure abdominal bandage. Small drink of hot water. Temperature, pulse, and respiration charted.
- 7, 8, 9, and 10 p.m. : Water 3 ounces, or Imperial drink (if awake).
- 11 p.m. : Milk 1 ounce, in hot water. T.P.R. charted ; another pillow given, and patient made comfortable generally.

FRIDAY.

- 12, 1, and 2 a.m. : Milk 1 ounce, diluted with barley, soda, or plain water.
- 3 a.m. : Coffee 3 to 5 ounces. T.P.R. Catheter if necessary. Wedge pillow (halfway).
- 5 a.m. : Milk 5 ounces, diluted with water, soda or barley water.

- 7 a.m.: Milk 5 ounces, diluted with water, soda or barley water. T.P.R. Patient made comfortable, and put up into Fowler's position.
- 9 a.m.: Tea 5 ounces, freshly made, not very strong.
- 11 a.m.: Milk 5 ounces, diluted. T.P.R.
- 1 p.m.: Beef-tea or Bovril 5 ounces. Patient made comfortable.
- 3 p.m.: Egg beaten up in milk or tea. T.P.R.
- 6 p.m.: Arrowroot, cornflour, or bread and milk, as preferred. T.P.R. Wedge pillow either removed or put halfway.
- 8 p.m.: Aperient—ol. ricini 1 ounce, calomel 3 grains, or mist. casc. sag. 1 ounce.
- 9 p.m.: Hot milk 5 ounces.
- 11 p.m.: Hot milk 5 ounces. T.P.R.

SATURDAY.

- 3 a.m.: Hot milk 5 ounces. T.P.R.
- 7 a.m.: Tea, bread and butter, lightly boiled egg. T.P.R.
- 9 a.m.: Enema saponis if necessary. Patient put up in Fowler's position again. Milk and biscuits.
- 11 a.m.: Bovril, beef-tea, or milk, as preferred. T.P.R.
- 1 p.m.: Jelly, custard, or milk and soda.
- 3 p.m.: Milk 5 ounces, diluted. T.P.R.
- 5 p.m.: Tea, bread and butter; small piece of plain or sponge cake may be given.

7 p.m. : Bread and milk, beef-tea with bread or dry biscuit, or bread and butter with cocoa. T.P.R.

11 p.m. : Milk, beef-tea, or Imperial drink. T.P.R.

SUNDAY.

3 a.m. : Milk, beef-tea, or Imperial drink. T.P.R.

7 a.m. : Tea or coffee, egg, bread and butter. T.P.R.

9 a.m. : Milk and biscuits.

11 a.m. : T.P.R. A four-hourly record is continued till the end of the first week.

12 noon : Light milk puddings, milk, custard, fish (boiled or steamed), or milk pudding and custard, fruit (chosen).

Monday and Tuesday : Chicken or fish.

Wednesday : Mince.

Thursday : Chop, boiled meat, vegetables, puddings, etc. Stitches removed. Bolsters and cradle discontinued, also four-hourly chart.

Second Week : Patient rests quietly in bed on full diet, and on the fourteenth day gets up for about five or six hours, on the couch or chair, and leaves the hospital after being up about five days.

I also append here a synopsis, drawn up by Miss Simmonds, of the teaching followed at the Prince of Wales's Hospital as to the general treatment of cases of abdominal operation :

Warmth.—When leaving the theatre, great care must be taken to keep the patient warmly covered; otherwise the difference between the temperature of the theatre (75° to 80° F.) and corridors (60° F.) will

prove a source of danger, adding to the shock already caused by the operation, or giving the patient a chill.

When the ward is reached, the patient is gently lifted from the ambulance into her bed (which has previously been warmed by hot bottles), and covered with warm blankets, special care being taken that the extremities are warm and well protected from the hot bottles which are put on either side.

Saline.—After an operation the patient is almost certain to suffer a certain amount of shock, and it has been found that saline is a good restorative, so as a routine practice 1 pint, or more if necessary, is given by the rectum unless hæmorrhage is suspected.

Comfort.—Rest being essential to healing, it is obvious that the position of the patient should be made as comfortable as possible. To insure rest for the abdominal muscles she is placed on her back, with the knees flexed, and a bolster put underneath to keep them in position. A cradle is then put on to support the weight of the bedclothes.

Fowler's Position.—About eighteen hours after an ordinary clean abdominal operation the patient is lifted into a sitting position, the bolster under her knees being prevented from slipping by straps fastened to the head of the bed, and either a wedge pillow or several pillows placed at her back to make her comfortable. In this position the patient suffers far less from flatulence or sickness. Should there be any sepsis, she is raised as soon as possible after the operation.

Sickness.—Usually after an anæsthetic there is some vomiting, lasting with some only a few hours, and with others for days. During the attacks the head should be turned to one side, and the hand gently but firmly pressed over the wound to support it. If sickness is persistent, sod. bicarb. 10 grains may be given in water, and repeated after a time if necessary. Sometimes tinct. iodi 3 minims in water 1 ounce will check it when the former fails.

Nourishment (if no sickness).—*First Day*: Small quantities of water *three hours after operation*. Milk 1 ounce in water, soda-water, or barley-water, *eight hours after operation*. Milk, beef-tea, coffee, tea, or broth, 5 ounces, two-hourly, *fifteen hours after operation*.

Second Day: Benger's food, arrowroot, bread and milk, cornflour, jelly or custard, with tea, coffee, milk, beef-tea, broth, etc.

Third Day: Milk pudding in addition, with bread and butter.

Fourth, Fifth, and Sixth Days: Fish (boiled or steamed); small quantity of vegetables, increased from fourth day; fruit (chosen).

Seventh Day: Full diet.

Aperients and Enemata.—If the patient is much disturbed with flatulence, either the rectal tube may be passed or a turpentine enema given (the latter is usually most satisfactory) during the first twenty-four hours, unless during the operation the bowel has been injured in any way; then on no account must it be

given without permission from the surgeon. The evening of the day following an operation an aperient is given—either ol. ricini 1 ounce, mist. casc. sag. 1 ounce, or calomel 3 grains—followed in the morning by mag. sulph. $\frac{1}{2}$ ounce.

If necessary, an enema may be given.

Bladder.—Often, without any apparent reason, the patient is not able to pass urine naturally. If this is the case, simple methods may be tried: Propping her up, with her feet against a hot-water bottle, hot sponges pressed over the urethral meatus, and a hot drink, but never allow straining or waiting longer than ten hours after the operation. The catheter must be passed at the end of that time, or sooner if the patient complains of pain or discomfort.

Observation.—*Temperature:* A four-hourly chart must be kept at least for a week, and even longer if the temperature is not settled. If above 100° F., a keen watch for sepsis, chest complication, etc., must be kept.

Pulse and Respiration: These must be charted, and it should be noted whether they are regular or irregular, normal or abnormal in volume or depth, or increased in rate.

Tongue: The tongue should be clean, although sometimes it is not so until after the first aperient. An antiseptic mouth-wash must be used.

Teeth: Care of the teeth is very important in the nursing of an abdominal operation.

CHAPTER XI

AFTER-TREATMENT OF VAGINAL OPERATIONS

ON the patient's return from the theatre she requires careful watching, just as in the case of an abdominal operation.

As regards the effect on the patient, it is a mistake to suppose that all abdominal operations are serious and all vaginal operations are trifling; for example, the degree of shock depends partly on the duration of the anæsthesia, and partly on the amount of blood lost. Now, a simple hysteropexy or ovariectomy may not take longer than ten to fifteen minutes, and the blood lost may not amount to a teaspoonful; on the other hand, a vaginal myomectomy, the clearing out of an incomplete abortion, or even a perineorrhaphy, may be accompanied by a considerable loss of blood, and some vaginal procedures may occupy half to three-quarters of an hour. In such cases there will be more shock after the vaginal than after the abdominal operation.

The important points for the nurse to note are—

1. *Sickness*.—When vomiting comes on, the patient must be helped, so that she does not choke or soil

herself, and, as previously stated, an unemptied bowl should never be left near the patient.

2. *Restlessness*.—The patient must not be allowed to uncover herself or to get out of bed.

3. *Excessive Loss from the Vagina*.—If this should occur, it must be reported at once.

4. *The Temperature, Pulse, and Respiration*, must be taken and charted every four hours.

The administration of a saline injection by the rectum is not so necessary as a matter of routine as it is after an abdominal operation; but it should be given whenever there has been much loss of blood, and it always has the advantage of diminishing the tendency to thirst.

Food.—For the first twenty-four hours after a vaginal operation the rules laid down for the treatment of abdominal operation cases should be followed out, because they are determined by the fact of anæsthesia; but solid food can be given much sooner after a vaginal operation, because there is less risk of stomach and bowel disturbance. Thus, if the operation is done in the morning, an ordinary breakfast may be given on the morning of the following day; and thereafter an ordinary diet is permissible, though it should be light for the first few days.

The Bowels.—As a general rule an aperient should be given on the evening of the day following operation, and there is nothing better than castor-oil in most cases. On the morrow an enema may be administered, the only exception to this rule being

that no enemata should be given for the first four days after an operation for complete rupture of the perineum, where the wound involves the anal orifice. It used to be the custom to keep the bowels locked up for the first few days after a perineorrhaphy, but I regard this practice as a bad one, for more harm is likely to accrue to the perineum from the passage of hard scybala than from early evacuation of softer motions.

The Bladder.—After all operations involving incisions about the vulva, such as perineorrhaphy and the dissection of cysts or tumours of the vulva, the



FIG. 41.—SELF-RETAINING CATHETER.

catheter should be passed at intervals of eight hours for the first forty-eight hours. The object of this is to avoid soiling of the operation field with urine. As an additional precaution it is advisable to pack a little cotton-wool at the vaginal entrance before passing the catheter, and to wash and dry the vulva carefully after the catheter has been removed. In the case of other vaginal operations, the catheter should be passed for the first twenty-four hours, because as a rule a plug of gauze is left in the vagina during this period, and there is a risk of its being contaminated by the urine if the bladder is emptied naturally.

After operations for vesico-vaginal fistula it is sometimes necessary to leave a self-retaining catheter in the bladder, so that the urine runs out of the bladder as fast as it enters, instead of accumulating there. The most convenient form is the india-rubber winged catheter (Fig. 41), and the free end of the catheter is attached to a long rubber tube, which passes into a bottle suspended by the side of the bed. After the first few days this catheter is removed, and an ordinary glass catheter is passed every six or eight hours. At the end of a week the patient is allowed to empty the bladder naturally.

Dressings.—1. After a curetting or vaginal myomectomy a strip of gauze is left in the vagina; sometimes the end of it is carried up into the uterus itself. A pad of wool is placed against the vulva, and kept in place with a T-bandage. It is renewed as often as is necessary, and especially if it becomes soiled by the action of the bladder or bowels. The gauze is removed at the end of twenty-four hours, and is not renewed.

2. After an operation involving an incision within the vagina—such as trachelorrhaphy, amputation of the cervix, vaginal hysterectomy, colporrhaphy, and operations for vaginal fistulæ—the vagina is packed with a strip of gauze, and a pad of wool is applied as before. When the gauze is removed at the end of the twenty-four hours, a fresh strip should be inserted, and this may be done daily for the first few days.

3. After a perineorrhaphy a strip of gauze is placed in the vagina, and a pad of gauze is applied to the

perineum, with a pad of wool outside it. It is not usually advisable for a fresh strip of gauze to be introduced into the vagina, because of the risk of disturbing the newly-united perineum, but a fresh pad of gauze and wool is applied to the vulva daily. Instead of separate gauze and wool, a pad of gamgee tissue may be used.

For all these purposes plain sterilized gauze, wool, or gamgee, should be used. Antiseptic preparations such as sal alembroth or double cyanide should only be used if sterilized dressings are not available. Iodoform gauze has no advantage; on the contrary, it has the definite drawback of a strong odour, which is very objectionable to the patient and to all who have to do with her.

The Sutures.—When catgut is used, the sutures do not require to be removed. This is a great advantage, because the removal of sutures from inside the vagina is difficult for the surgeon and uncomfortable for the patient. If a suture in the perineum works loose by partly cutting through, it may be removed.

Douching.—The practice of different operators varies in the matter of douching after these operations. My own practice is as follows: In all cases where a strip of gauze is taken from the vagina after twenty-four hours there may be a certain amount of smell, and in cases of curetting or myomectomy a douche should be given as soon as the gauze is removed. Afterwards a douche need not be given as a matter of routine, but if there is any discharge of a

semi-purulent or purulent character, or if there is any smell, a douche is given once or twice a day. If there is pus, it is advisable to use biniodide of mercury lotion (1 in 4,000); otherwise lysol or sanitas is best.

In cases involving incisions in the vaginal walls, cervix, or perineum, a douche should be used as sparingly as possible; and if it is required, special care should be taken to leave the vagina and perineum as dry as possible. My view is that the drier these parts are kept, the greater is the probability of healing by first intention. In cases of acute antelexion an intra-uterine glass stem is sometimes inserted, and left in position for a week. The stem is kept in position by the pressure of the posterior vaginal wall, and therefore in these cases a douche must be given with great caution, because if the vagina becomes distended with lotion the stem loses its support and drops out. Consequently, when a douche becomes absolutely necessary, the fluid must be run in very slowly, and it is a good plan to place a rubber tube in the vagina, alongside the douche nozzle, to insure that the fluid has an easy exit.

Position.—After vaginal operations the patient may be allowed to lie in any position that she finds comfortable; and when the perineum is not involved there need be no restriction whatever. In cases of perineorrhaphy the patient should be encouraged to keep as quiet as possible, and she should not indulge in much movement of the legs. It used to be the practice to tie the patient's legs together after these

operations, and keep them so for several days. This barbarous and unnecessary custom is now discarded. A slight separation of the thighs is an advantage rather than otherwise, as it allows the field of operation to remain cool and dry. It would require an extraordinary amount of separation of the thighs to interfere with the healing of the perineum, a degree so uncomfortable that no rational patient would ever attempt it.

The factor that we have to fear in preventing the union of the perineum is not movement, but sepsis; and therefore the whole care of the nurse should be directed to keeping the parts clean and dry. For example, after the action of the bladder or bowels, the perineum should be gently sponged over with a mild antiseptic, and then carefully dried.

Getting up.—After operations on the uterus and inside the vagina, the patient is allowed to get up at the end of a week, as long as the general condition is satisfactory; and she may leave the home or hospital in another five to seven days. In cases of perineorrhaphy and operations about the vulva, it is usually advisable to allow an extra week, the patient getting up at the end of a fortnight. Generally speaking, a patient may be allowed to resume her ordinary ways of life a month after a vaginal operation.

CHAPTER XII

COMPLICATIONS AFTER OPERATIONS

THERE are various complications that may disturb convalescence, and some of them are of the utmost gravity. The nurse has not, of course, the responsibility of treating these; but she ought to know what they are, and she should be able to recognize the signs that indicate that all is not well, so that she may call the surgeon's attention to them. I shall therefore review the danger-signals that every good nurse should be familiar with, and then say a few words about the more important complications.

Danger-Signals.

The General Appearance.—This is a most valuable indication, and from it alone the experienced surgeon and nurse are able to form a correct impression of the progress of the case. Thus, if the patient lies placid and cheerful, with a bright expression and a ready smile, there is not likely to be any cause for anxiety. A flushed face or marked pallor, sweating, a look of pain or distress, restlessness, or an apathetic demeanour, will tell us that all is not going well.

The Temperature.—A rise of temperature to 100° or 101° F. within the first twenty-four or thirty-six hours need cause no anxiety; it is often a reaction from shock, and it is also found after an operation in which there have been signs of commencing inflammatory trouble. If the temperature rises rapidly to 103° or 104° , look out for peritonitis. A continued temperature of about 100° going on during the first week should lead to examination of the wound, as it may be due to superficial suppuration. A continued temperature of 101° or 102° may mean an inflammatory focus in the cellular tissue of the pelvis. A temperature of 100° to 103° may indicate chest trouble, such as bronchitis or pneumonia. A persistent sub-normal temperature is a bad sign, and usually shows that there is shock or internal hæmorrhage.

The Pulse.—As long as the pulse keeps down to 80 the outlook is generally good. A pulse of 100 to 120, full and bounding, is a sign of inflammatory trouble, and accompanies the early stages of sepsis and of chest trouble. A weak pulse about 100 to 120 is found with shock, and a weak running pulse of 130 to 160 nearly always means active hæmorrhage. An irregular, intermittent pulse is a bad sign, and calls for extra caution in allowing the patient up, as it may indicate a fatty heart. A weak, slow pulse is one that is calling aloud for more nourishment.

Respiration.—In a normal case the breathing should not be quicker than 16 to 20 a minute. Any acceleration over this should make us look out for

bronchial and pneumonic complications. A sighing, rapid respiration with rapid pulse, restlessness, and great pallor, points to hæmorrhage.

The Tongue.—As long as the tongue remains moist and clean there is little danger ; a dry brown tongue is a disconcerting sign, as it is often found in the early stages of sepsis, and if it becomes hard, coated, and dark brown or black, the outlook is very bad ; such patients often die. It is not an unusual thing for the tongue to remain rather dirty and coated for the first few days in the case of patients with a tendency to constipation ; but such an appearance is also a premonitory indication of intestinal obstruction.

Abdominal Distension is not infrequent during the first twenty-four hours, and if flatus is being passed no anxiety need be felt. Nevertheless, I like to feel a hollow in the epigastrium between the ribs. When no flatus is being passed by the end of the second or third day, we must look out for sepsis (with a rising temperature) or intestinal obstruction (with a normal or falling temperature and vomiting).

Vomiting.—Many patients are sick for a few hours after operation ; the vomiting becomes alarming only when it persists into the second or third day, and more particularly if it becomes faecal. “Brown vomit” is also a very bad sign ; it is found both with sepsis and with commencing obstruction. Persistent vomiting may also be a sign of acetonæmia.

Suppression of Urine is generally a grave sign. It may be an indication of nephritis, or it may be the

result of some operative accident, such as injury to bladder or ureters. We must be careful to distinguish between suppression and retention; the passing of the catheter will at once settle the question.

Some patients experience great difficulty in passing water naturally for some days after operation, and in the absence of other symptoms this need not cause any anxiety. I have known the difficulty to persist for a fortnight.

Restlessness is a bad sign, and when it is marked, and associated with a rapid, thready pulse, pallor, and sighing respiration, it means that internal hæmorrhage is going on.

Complications.

We may now pass these under review, considering the signs of each one and the treatment that is required. In some cases this treatment may properly be begun by the nurse pending the arrival of the surgeon.

Shock.—This was considered to be more common formerly than it is now; for it is recognized that some patients who were supposed to be suffering from shock were really showing the effects of the loss of large quantities of blood during the operation, or were in the early stages of sepsis. Shock may, of course, be due to a prolonged and severe operation; but in many such operations there is a good deal of blood lost, and this may be the real cause of the condition. A true shock may also be due to the effect of even a relatively

slight operation on a particularly nervous and susceptible patient.

Signs of Shock.—The patient lies in a semi-comatose condition, very pale and often sweating, with feeble but not specially rapid pulse and ordinary breathing. She can be roused, but soon sinks again into lethargy. The temperature is usually subnormal.

Treatment.—The important points of treatment are warmth and stimulation. The patient should lie with the head low and the foot of the bed slightly raised; she should be packed round with hot-water bottles, well protected so that they do not burn her. A rectal injection of warm normal saline solution should be administered, or a small nutrient enema of brandy (1 ounce) and beef-tea (3 ounces). Strychnine injected hypodermically used to be a favourite remedy, but it is now generally held that a hypodermic injection of ergotinine citrate ($\frac{1}{100}$ grain) or pituitary extract is better. Cases of shock uncomplicated by hæmorrhage or sepsis nearly always recover.

Vomiting.—Vomiting may be merely a symptom of intestinal obstruction or acetonæmia; but there are also cases in which it has not any obvious cause beyond the effect of the anæsthetic, and yet it may be very troublesome, continuing for one or two days or even longer.

Treatment.—The simplest plan is to give one or two teaspoonfuls of bicarbonate of soda in a feeder full of hot water. This will probably be returned, but

it has the effect of washing out the stomach, and so ridding it of ether-impregnated mucus, and perhaps bile. A further half-teaspoonful is then given in 2 ounces of hot water, and this will probably be retained and the sickness will cease. If, on the other hand, it should continue, a drop of tincture of iodine in 1 ounce of water often acts like a charm; at the same time a mustard leaf may be placed on the epigastrium, and the patient propped up in bed. In obstinate cases all nourishment by the mouth should be withheld for twenty-four hours, and a nutrient enema administered four-hourly, consisting of 4 ounces of peptonized milk and 2 drachms of meat-juice.

Flatulence.—A certain amount of flatulence is present in nearly every case, but usually it subsides pretty quickly.

Treatment.—When the patient is disturbed with flatulence, the rectal tube should be passed four-hourly or from time to time; at the same time the patient is often able to expel flatus more easily if she is propped up in a sitting posture. A good deal of discomfort attendant on flatulence may be due to the fact that the binder is tightened thereby, and it is always permissible for the nurse to loosen the binder; this will sometimes give immediate relief, just as women who suffer from flatulence in everyday life get immediate relief on removing their corsets. When discomfort persists, a turpentine enema should be given; the formula used at the Chelsea Hospital

for Women is a very useful one: Turpentine 2 ounces, olive-oil 4 ounces, soft soap 4 ounces, with water to 2 pints.

Bronchitis and Broncho-Pneumonia. — It is generally thought that these complications are more apt to occur when ether is the anæsthetic used, and there is little doubt that in patients predisposed to chest trouble ether has a bad effect. Nevertheless, I believe that sometimes the condition is brought about by the transfer of the patient from a hot operating-room along draughty passages and corridors, particularly if she is not well wrapped up. For this reason I advocate the use of a large pad of gamgee tissue over the patient's chest during abdominal operations, and she should be most carefully wrapped up (including the head) when she has to be carried from the operating-room to another room or to the ward.

Signs of Bronchitis and Pneumonia.—The temperature rises to 101° or higher; the pulse is rapid and full; respiration is quickened to 24, 30, or even 36, per minute, and may appear laboured; the face is flushed and cyanotic, and soon there is expectoration of muco-pus, which may be blood-tinged.

Treatment.—Pending the arrival of the doctor, who will administer suitable medicines, the nurse may apply thermogene wool over the chest, keep the patient warm, and, if it appears to relieve the patient, she may keep a bronchitis kettle going, with compound tincture of benzoin (Friar's balsam).

Hæmorrhage.—After the completion of an operation, and when shock has passed off and the heart is beating more vigorously, bloodvessels that had appeared contracted may open up, or a ligature that has been applied may slip, and hæmorrhage occurs. This is known as *secondary hæmorrhage*. In the case of vaginal operations the blood will show itself on the pads; and in the case of an abdominal operation when a drain has been inserted it will appear on the dressings, so that there will be early warning of its occurrence. But in the case of an abdominal operation when the wound has been completely closed, the hæmorrhage is internal, and it can only be recognized by the signs to which it gives rise. It is therefore most important that the nurse should be able to recognize these.

Signs of Internal Hæmorrhage.—The patient turns very pale, becomes restless, and has an anxious expression; the pulse is rapid, running up to 120, or faster; indeed, it may become so fast as to be uncountable, when it is said to be a running pulse; it is thin, thready, and weak. The temperature is normal at first, and subnormal later. Respiration becomes laboured and sighing, because, owing to the loss of blood, the patient is not getting enough oxygen; it is an air-hunger. The patient is not unconscious or dull, but in full possession of her faculties. This, together with the restlessness, the sighing breathing, and the rapidity of the pulse, serves to distinguish the condition from that of shock.

Treatment.—Stimulants must be avoided, because they increase the tendency to hæmorrhage. While the surgeon is being summoned, the foot of the bed should be raised and the patient kept as quiet as possible, and preparations for re-opening the abdomen should be made at once. As soon as the bleeding-point has been secured, a venous saline transfusion should be resorted to.

Intestinal Obstruction.—This means that, owing to a kink of the bowel or some obstructing band or adhesion, fæces and flatus cannot pass along the bowel. The condition is a very grave one, and it is followed by death in two or three days if not relieved.

Signs of Intestinal Obstruction.—The first sign is abdominal distension, together with the fact that no flatus is passed by the rectum. The rectal tube yields no result. As the bowel cannot pass its contents along in the proper direction, it makes an effort to do so in the reverse direction, and so vomiting comes on—first the contents of the stomach, then bilious vomiting, then the yellowish contents of the small intestine, and lastly the brownish contents of the large intestine. This last is called “fæcal vomiting,” and it is a sign that the patient is in grave danger. The tongue is at first dirty and furred, and then dry and brown. The pulse at first is unaltered, but later it becomes quicker. The temperature is normal, and the patient complains of abdominal pain.

Treatment.—When obstruction threatens, an effort should be made at once to secure action of the bowels

by the administration of calomel in divided doses, followed by repeated doses of sulphate of soda and a copious enema. Expectant treatment must not be carried on too long, however; and if faecal vomiting comes on, the abdomen should be reopened as soon as possible.

Sepsis.—Sepsis is contracted as a rule at the time of the operation, but sometimes it is due to conditions that were present before.

Signs of Sepsis.—As a rule the patient looks ill from the first, and does not rally properly from the operation. The temperature runs up—perhaps on the first evening—but in other cases not till the following morning. It may vary from 100° to 103° F., and sometimes it is ushered in by a rigor, when the temperature may run up to 104° or 105° F. The pulse is bounding or rapid, 120 to 130; the abdomen is distended and tympanitic; the tongue is dry and brown, and the inside of the mouth and the teeth are coated; vomiting comes on, resembling that found in obstruction; and in many cases no flatus or fæces are passed, because the condition of sepsis virtually causes obstruction owing to paralysis of the bowels.

Treatment.—When once a case becomes septic the outlook is exceedingly grave; nevertheless, we must not fold our hands and leave the patient to her fate. The principles of treatment here are abdominal drainage, the administration of saline solution by the rectum, and the propping up of the patient in the sitting-up posture, in order to protect the vulnerable

diaphragmatic area of the peritoneum as much as possible. Calomel should be given early, in divided doses, and an injection of some antitoxic serum may be tried, according to the nature of the case. Every effort must be made to maintain the patient's strength, and large quantities of stimulant are called for.

White Leg—This is generally due to thrombosis of the veins and lymphatics. It may be septic in origin, but in some cases no sepsis is present.

Signs of White Leg.—As a rule the patient first complains of pain in one thigh or calf, and soon the nurse may observe that the leg is swollen, hard, and white. The swelling may become so great that the leg becomes nearly twice the size of the sound limb. Sometimes the condition develops first in one leg, then, after a few days, in the other.

Treatment.—The patient should be kept absolutely at rest, with the affected limb slightly raised and enveloped in wool. Belladonna and glycerine may be painted over the affected area. Gentle uniform pressure should be applied, but not by the usual roll bandage, whose application disturbs the leg too much; a sheet of calico should be passed under the limb, and fastened down the front with safety-pins.

Parotitis.—This is a swelling that forms in the region of the parotid gland, just behind the angle of the jaw. It is caused by oral sepsis, the infection travelling from the mouth along the parotid duct to the parotid gland. Since its nature was recognized it has

become much less common, because the toilet of the mouth is much more carefully attended to.

Signs of Parotitis.—The patient complains of pain behind the jaw, and soon a swelling appears, which may attain a large size.

Treatment.—The mouth should be cleaned out carefully, and an antiseptic mouthwash may be given. Fomentations can be applied to the swelling, and if a definite abscess forms it will require to be opened.

Pulmonary Embolism.—This is a sudden and tragic accident which may come on when the patient is apparently progressing quite well, a week to ten days after an operation. It is due to the detachment of a clot of blood, which travels in the blood-stream and lodges in the lungs.

Signs of Pulmonary Embolism.—The patient is suddenly seized with intense dyspnoea (difficulty in breathing), and she may also complain of pain in the chest. She fights for her breath, and rapidly becomes livid in the face, as if she were being choked. As a rule the tragedy is of short duration, because no treatment is of any avail, and usually the patient succumbs within twenty minutes or half an hour.

The inhalation of oxygen offers the only possible chance, and it should be resorted to at once.

Acetonæmia.—This is a condition which occurs more often in children than in adults. It is thought to be due to the effect of the anæsthetic on the liver.

Signs of Acetonæmia.—The principal sign is vomiting, the vomited matter being as a rule brown,

rather like coffee-grounds. In the vomit and in the patient's breath there is a peculiar smell, that of acetone; it has been variously compared to the smell of apples and of new-mown hay.

Treatment.—The condition is a very serious one, and often ends fatally. The important point in treatment is to try to keep up the patient's strength, and, in view of the vomiting, nutrient enemata should be given. Glucose should be given in doses of a teaspoonful every three or four hours, but it is thought to be more efficacious in preventing than in curing the condition, and for this reason it may be given before the operation, as mentioned in Chapter VIII.

INDEX

- ABDOMINAL binder, 112**
 loosening of, after
 operation, 148
 distension, 152, 172, 175
 operations, 115, 138
 after - treatment of,
 146
Abnormal pregnancy, 33
Abortion, 34
Acetonæmia, 135, 172, 174,
 181
After-treatment of abdominal
 operations, 146
 vaginal operations,
 163
Alexander's operation, 117
Amenorrhœa, 53
Amputation of the cervix, 125
Anæsthesia, examination
 under, 71, 137
Anatomy of the bladder, 7
 of the broad ligament, 10
 of the Fallopian tubes, 12
 of the ovaries, 13
 of the uterus, 9
 of the vagina, 6
 of the vulva, 2
Antisepsis, 91
Aperients after operation, 151,
 161
 before operation, 136
Asepsis, 91
Atresia of the vagina, 24
Auvard's speculum, 124
- Bartholinian abscess, 26**
 cyst, 6, 40
 duct, 5
 gland, 5
Bladder, 7
 attention to, after opera-
 tion, 151, 162, 165
 before examination,
 65
 before operation, 136
 sound, 68
Bonney's needles, 120
Bowels, attention to, after oper-
 ation, 151, 161, 164
 before examination,
 64
 before operation, 131,
 136
Broad ligament, 10
Bronchitis after operations, 176
 in relation to operation,
 131
Broncho-pneumonia after oper-
 ations, 176
Brown vomit, 172
- Cæsarian section, 34**
Carcinoma of the uterus, 50
Catheter after operation, 151,
 162, 165
 before operation, 136
 self-retaining, 166
 the use of, 79
Cervix, 9

- Change of life, 19
 Chelsea Hospital for Women—
 treatment after operations, 155
 Cleanliness before examination, 66
 before operation, 133
 Climacteric, 19
 Clover's crutch, 122
 Cœliotomy, 117
 Colpo-perineorrhaphy, 124
 Colporrhaphy, 122
 Complications after operation, 170, 173
 Convalescence after operation, 154
 Corpus luteum, 16
 Counting of swabs and forceps, 142
 Cradle after abdominal operations, 142
 Curette, 126
 Curetting, 126
 Cystocele, 33
 Cysts of the pelvic organs, 40

 Danger-signals after operation, 170
 Diet after operation, 150, 155, 161, 164
 before operation, 135
 Dilatation of the cervix, 126
 Dilators, uterine, 126
 Displacements of the pelvic organs, 31
 Distension of abdomen after operation, 152, 172, 175
 Dorsal position, 58
 Douching, 72
 after operation, 167
 before examination, 166
 before operation, 134
 Dress, attention to, before examination, 65
 before operation, 135
 Dressings, 95, 109, 114
 after operation, 152, 166

 Dysmenorrhœa, 55
 Dyspareunia, 55

 Embolism, pulmonary, 31, 180
 Endometritis, 26
 Enemata after operation, 152, 156, 158, 161
 nutrient, 175
 turpentine, 152, 156, 175
 Examination, preparation for, 58
 under anæsthesia, 71, 137
 Extra-uterine pregnancy, 35

 Fallopian tubes, 12
 Fenton's dilators, 126
 Fergusson's speculum, 67
 Fibroids of the uterus, 47
 Fistula, 52
 operations for, 125
 Flatulence after operations, 152, 172, 175
 Food after operation, 150, 155, 161, 164
 before operation, 135
 Fowler's position, 149, 160

 Genu-pectoral position, 62
 Getting up after abdominal operations, 154
 vaginal operations, 169
 Gloves, preparation of, 97
 Glucose before operation, 135, 181
 Gynæcological position, 62

 Hæmorrhage after operation, 177
 at the menopause, 20, 55
 internal, 177
 secondary, 177
 Heart disease in relation to operation, 130
 Hodge pessary, 86
 Hot-water bottles, 107
 Hydrosalpinx, 43
 Hymen, 4

- Hysterectomy, abdominal, 116
 vaginal, 127
 Hysteropexy, 117
 Infection, methods of, 25
 Inflammation of the pelvic organs, 25
 Injuries of the pelvic organs, 52
 Instruments for abdominal operations, 118
 for examination, 67
 for minor treatment, 82
 for vaginal operations, 122
 sterilization of, 95
 Internal hæmorrhage, 177
 Intestinal obstruction, 178
 Kelly's pad, 107
 Knee-elbow position, 62, 85
 Labia majora, 3
 Labia minora, 4
 Laparotomy, 118
 Lateral position, 59
 Lithotomy position, 64, 105
 Lotions for douches, 76
 for examination, 71
 for operation, 108
 Macdonald's sterilizer, 111
 Mackintoshes, 107
 Malformations, 21
 Many-tailed bandage, 112
 Massage after operation, 153
 Menopause, 19
 Menorrhagia, 54
 Menstruation, 16
 disorders of, 53
 in relation to examination, 66
 in relation to operation, 137
 Metrorrhagia, 54
 Minor treatment, 72
 in the out-patient department, 82
 Miscarriage, 34
 Mons veneris, 3
 Mouth, attention to, after operation, 147, 162
 before operation, 132
 Müllerian ducts, 22
 Myomectomy, abdominal, 117
 vaginal, 127
 Needles, 120
 Neugebauer's speculum, 68
 Normal saline solution, 109
 Nourishment after operations, 150, 155, 161
 Nutrient enemata, 175
 Obstruction of the bowels after operations, 178
 Operating-room, 93
 furniture of, 94, 100
 plan of, 104
 Ovarian cysts, 42
 Ovaries, 13
 Ovariectomy, 116
 Ovulation, 15
 Ovum, 1, 16
 Pain after operation, 147
 Parotitis after operation, 132, 180
 Parovarian cyst, 42
 Pelvic abscess, 28, 29
 cellulitis, 28
 Perineorrhaphy, 121
 Perineum, 6
 Pessaries, 86
 Playfair's probes, 82
 Pneumonia after operations, 176
 Position after operations, 148, 168
 Positions for examination, 58
 for operation, 105
 Pregnancy, extra-uterine, 35
 Preparation for examination, 58, 137
 for operation, 93, 99, 136
 of accessories, 94, 106
 of instruments, 95, 115

Preparation of patient, 96, 129,
134

of room, 93, 99
of swabs and dressings,
95, 109

Prince of Wales's Hospital,
Tottenham—treatment after
operations, 157

Procidentia, 32

Prolapse of the uterus, 32

Pruritus, 56

Pseudo-hermaphrodis, 22

Pulmonary embolism, 31, 180

Pulse after operation, 152, 171
before operation, 130

Pyosalpinx, 28

Rectocele, 33

Respiration after operation,
152, 171

before operation, 131

Restlessness after operations,
173

Retained menses, 24

Retroflexion, 31

Retroversion, 31

Ring pessary, 86

Rotunda douche, 73

Round ligaments, 11

Saline injection after operation,
147, 160, 164
solution, 109

Salpingitis, 26

Scarifier, 82

Secondary hæmorrhage, 177

Sepsis, 91
after operations, 179

Septicæmia, 30

Shock, 163, 173

Shortening of the round liga-
ments, 117

Sickness after operation, 161,
163

Sims's position, 59

speculum, 68

Speculum, Auvard's, 124
Fergusson's, 67

Speculum, Neugebauer's, 68
Sims's, 68

Sterility, 56

Sterilizer for dressings, 110
for instruments, 95

Stimulants after operation, 151

Suppression of urine after
operation, 172

Suture material, 120

Sutures, removal of, 153, 167

Swab-holder, 68

Swabs, 114
counting of, after opera-
tion, 142

Tampons, 77

Temperature after operation,
152, 171
before operation, 129

Tongue after operations, 172

Tottenham Hospital—treat-
ment after operations, 157

Trachelorrhaphy, 125

Trendelenburg position, 105

Tubal pregnancy, 35

Tubo-ovarian abscess, 28
cyst, 43

Tumours of the pelvic organs,
40, 44

Urethra, 4, 8

Urethral caruncle, 124

Urine examination before oper-
ation, 132
suppression of, after opera-
tion, 172

Uterine dressing forceps, 68
probe, 82
scarifier, 82
sound, 67

Utero-sacral ligaments, 12
Uterus, 9

carcinoma of, 50
displacements of, 31
double, 23
fibroids of, 47
prolapse of, 32
retroversion of, 31

- Vagina, 6
 atresia of, 24
Vaginal douche, 72
 hysterectomy, 127
 myomectomy, 127
 operations, 121, 143
 suppositories, 79
Vaginitis, 26
Ventrofixation, 117
Vesico vaginal fistula, 52
Volsella, 118
Vomiting after operation, 146,
 161, 163, 172, 174
Vulva, anatomy of, 2
Vulvo-vaginitis of children, 26
Warmth after operations, 159
Washing before operation,
 134
Water for operations, prepara-
 tion of, 94
Wertheim's operation, 116
White leg, 30, 180
Wolffian ducts, 22
Womb, see Uterus

THE END

24.A.306.

Gynaecological nursing. 1912

Countway Library

BET5410



3 2044 046 007 415

24.A.306.

Gynaecological nursing. 1912

Countway Library

BET5410



3 2044 046 007 415